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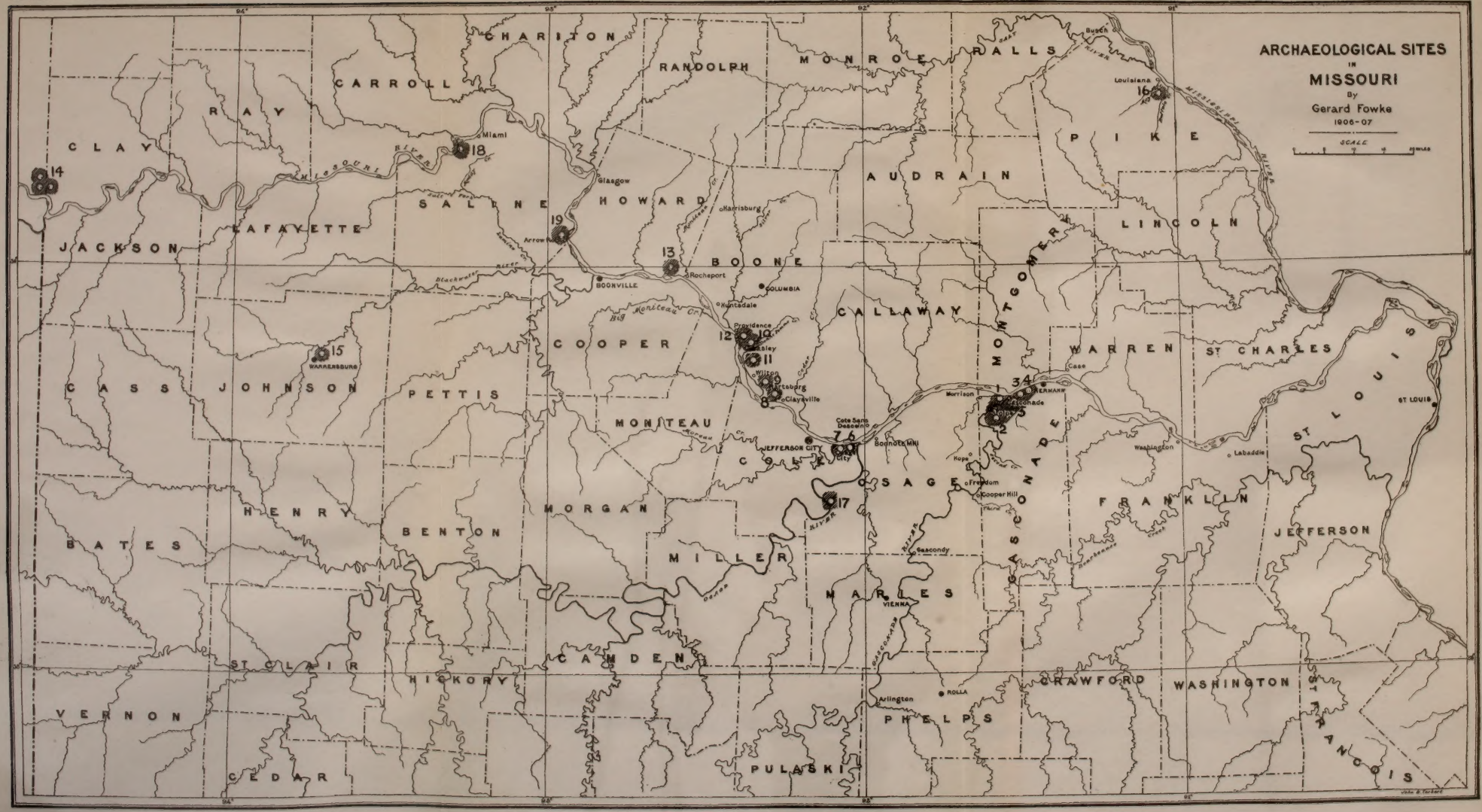
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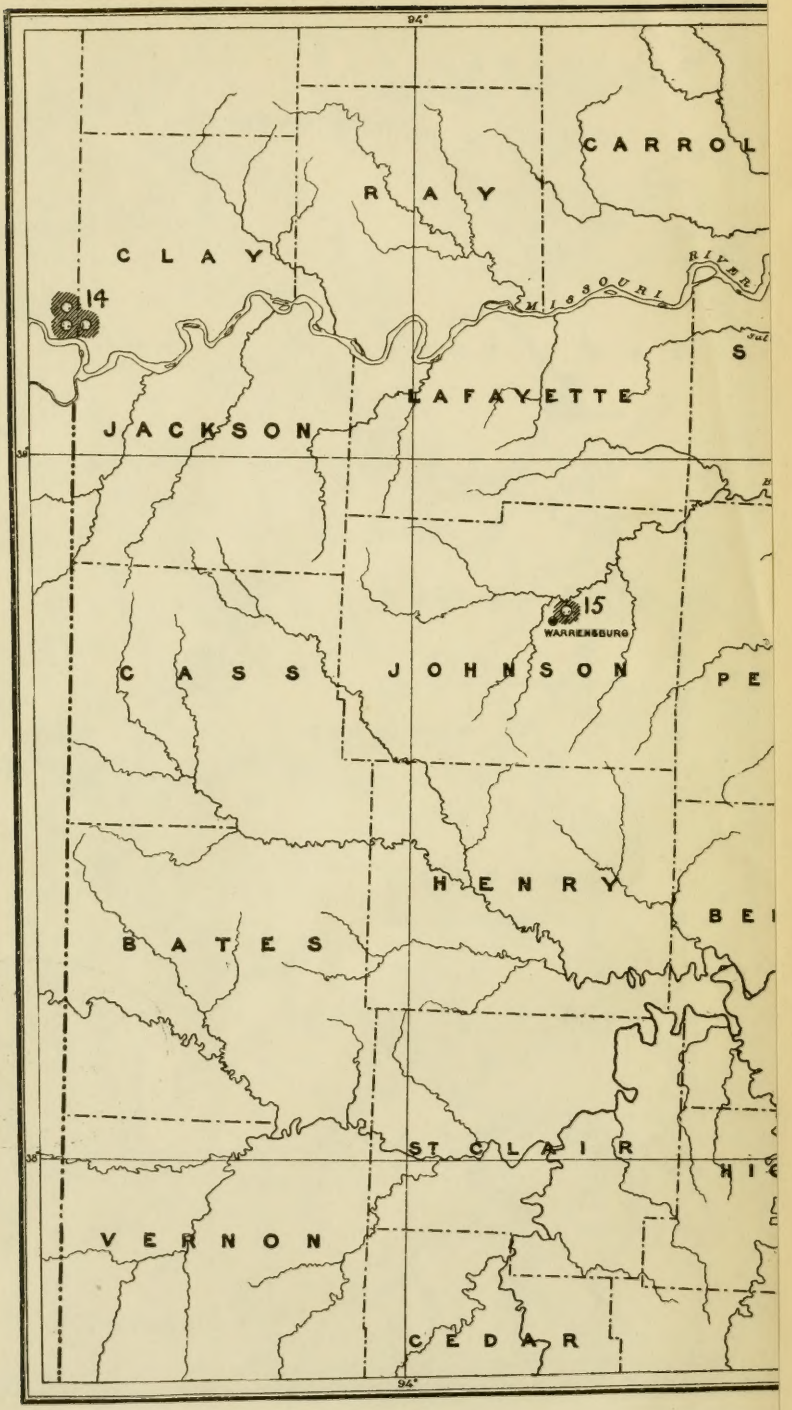
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SMITHSONIAN INSTITUTION
BUREAU OF AMERICAN ETHNOLOGY
BULLETIN 37

ANTIQUITIES OF CENTRAL AND SOUTH-EASTERN MISSOURI

BY

GERARD FOWKE

(REPORT ON EXPLORATIONS MADE IN 1906-07 UNDER THE AUSPICES OF THE ARCHÆOLOGICAL INSTITUTE OF AMERICA)

Smithsonian Institution.
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National Museum.

WASHINGTON
GOVERNMENT PRINTING OFFICE
1910

LETTER OF TRANSMITTAL

The Archæological Institute of America,
Washington, D. C., September 28, 1908.

Dear Sir: I transmit herewith the manuscript and illustrations of a paper, entitled "Antiquities of Central and Southeastern Missouri," by Gerard Fowke. This is a report of two seasons' field work under the auspices of the St. Louis Society of the Archæological Institute of America. I am authorized by the executive committee of that society to offer this manuscript for publication by the Bureau of American Ethnology.

I am, with sincere respect, very truly, yours,

Edgar L. Hewett,
Director of American Archæology.

Mr. W. H. Holmes,
Chief of Bureau of American Ethnology,
Washington, D. C.

Respectfully submitted to the Secretary of the Smithsonian Institution for publication, with his approval, as a Bulletin of the Bureau of American Ethnology.

W. H. Holmes, *Chief.*

PREFATORY NOTE

The explorations described in the accompanying report were made during the years 1906 and 1907 under the auspices of the Archæological Institute of America, the funds necessary for carrying on the work being provided through the liberality of the gentlemen here named, members of the St. Louis Society of the Institute: William K. Bixby, D. I. Bushnell, Edward Mallinckrodt, J. M. Wulfing, Murray Carleton, J. D. Bascom, Geo. O. Carpenter, Mrs. E. A. Howe, C. H. Huttig, J. D. Markham, James A. Waterworth, Mrs. C. D. Graham, Hugo Koehler, Mrs. I. W. Morton, Charles Nagel, Dr. W. F. Parks, Dr. H. M. Whelpley, and J. J. Cole.

St. Louis, Missouri.

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ANTIQUITIES OF CENTRAL AND SOUTHEASTERN MISSOURI

By Gerard Fowke

INTRODUCTION

During the first season the work here dealt with extended along the Missouri river from the Gasconade to Moreau creek on the south side, and from Cedar creek to Easley on the north. The second season's work began at Easley and was followed out to the southwest part of Howard county, thence into Saline county; the mounds opposite Kansas City were next examined; some investigations were made in Pike county; and work for the year closed in the southeastern part of the State.

On subsequent pages will be found a list of localities of archeological interest in various parts of the State, derived partly from personal investigations, and partly from the reports of numerous persons familiar with the regions named; this list is necessarily incomplete. The owners of many of these remains have granted permission for their exploration, and it is probable that similar leave can be readily obtained for others. In very few instances was the privilege of excavating refused unless there were good and sufficient reasons for the refusal.

As some words have several meanings, dependent on the connection in which they are used, certain terms appearing frequently should be explained to prevent misapprehension or confusion on the part of the reader.

"Summit," or "apex," means the highest point of a mound; this may now be several feet from its original position owing to the shifting of earth due to cultivation or erosion.

"Top" means the present surface of the mound in any part within the area where it begins to rise from the natural soil.

"Surface" means the original surface of the ground upon which the mound is built.

"Bottom" means the plane of junction of the deposited earth and the undisturbed ground, being practically synonymous with the term "surface."

The terms "soil" and "subsoil" are used in their ordinary sense.

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"Center" is the vertical line from base to summit of a mound regular in form, or from the middle point within the area covered in the case of a structure unevenly built, or subsequently altered in form.

A "doubled," or "folded," skeleton or body is one which was bent at the joints before burial, so as to occupy less space. Sometimes only the legs were bent, but usually the knees were drawn up to the chin and the feet against the hips. Perhaps this custom occasionally had an occult significance, but in general it was resorted to merely to avoid the labor of digging a large grave. Nearly all the bodies thus bent were laid on the side, though some were placed on the back. This method of inhumation is probably the basis of numerous reports concerning "bodies buried in a sitting [or squatting, or crouching] position." It has never been the fortune of the present writer, or of any of his coworkers, to find remains to which any of these terms are applicable.

"Skeleton burial" means one in which the bones were denuded of flesh before interment.

"Bundled" bones are those whose position in the earth indicates that some care was taken, or at least an attempt made, to place a disarticulated frame, or portions of it, in somewhat regular order.

"Bunched" bones are those thrown in carelessly or at random, apparently in a reckless fashion.

Except as definitely specified otherwise, all mounds mentioned in this report are of the so-called conical form. Of course, no mound was ever "conical;" mounds could not be built in that shape, nor would it be possible for a heap of earth to hold this form through the first rain. "Dome-shaped" would be a better term in this connection.

In descriptions of mounds, especially of those in cultivated fields, measures of height and diameter are usually given to the nearest foot and nearest five feet, respectively. Accurate measurements are nearly always impossible, because on sloping ground the margin of the base can not be determined. The actual height of a mound can seldom be definitely ascertained until its bottom is reached. The distance between mounds of a particular group is measured from center to center as they now stand.

Frequently, vegetation is so scanty on the ridges, exposed as they are to excessive denudation by winds and rains, that sod and roots do not leave a distinct stratum at the plane separating natural from dumped earth. In these cases it is necessary to remove not only the mound itself, but also the soil on which it stands, until the subsoil is reached. Only thus can the explorer be assured that he is not passing over a grave or other aboriginal excavation beneath the tumulus which is being examined. Such procedure often involves

the removal of several hundred cubic feet of earth which is in its natural position—a great waste of time and labor, but one that can not be avoided. On the other hand, this method sometimes shows that material which has every appearance of undisturbed loess forms part of the artificial structure. Very erroneous estimates of the age of skeletal or other remains may result from failure to distinguish earth in situ from earth which has been deposited by human agency.[a]

In all cases where the deposited earth is very hard it is possible that it was taken from the original situation while wet, or at least damp, and consequently much easier to dig. Its present compactness may frequently be only the natural result of laborers walking about upon it while engaged in the task of piling it up. If grave pits or other cavities were required in the subsoil at a time when the ground was harder than usual, the workers could lighten their task by carrying water and pouring it over the area on which they were engaged. In a very dry season it is not possible to excavate with primitive tools the tough native clay in which some of these graves are found.

No special importance attaches to points of the compass as given in the descriptions. As most of the mounds were erected on narrow, winding ridges, their outlines and relative positions are determined by the topography only, no attention being paid by the builders to cardinal points.

The interior faces of the walls in nearly every vault opened had an outward slope, making the vaults larger at top than at bottom. This method of construction was probably intentional, the purpose being to prevent the wall from falling inward, the backing of earth and stone built up concurrently holding it from falling outward. But the walls noticed in some of the mounds opposite Kansas City prove that the builders could lay them up vertical when they desired to do so.

No effort was made to break joints or to interlock at corners; when a stone was ready, it was placed where needed, regardless of the position of the stones below. These characteristics appeared in all the vaults examined; the builders seemingly never learned how to strengthen the structure by arranging the courses differently. But as the vaults were to be covered immediately and never again used, it mattered little how they were put up. If these people had erected stone houses for purposes of shelter, probably they would have learned in time the advantages of both the technical features above mentioned.

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[a] Nearly all the bones unearthed were so decayed and fragile that it was impossible to remove them intact. Many of them were less cohesive than the earth in which they were embedded. This statement is applicable even to the skulls and long bones. It was necessary to saturate many of them with glue in order to remove them in even tolerable condition. This explains why no perfect osteological remains were recovered.

Although vaults such as are described in the following pages are vaguely brought to notice by occasional mention in scattered reports, no photographs have previously appeared, nor has there been offered a satisfactory explanation as to their purpose. In some of the earlier works relating to Missouri the few vaults then known are called "houses," "walled houses," or "underground houses." One very elaborate illustration appeared of the work near Louisiana (see fig. 17). While the structures as they actually exist are roughly laid up, at the same time they are a new feature in American archeology so far as it relates to the region east of the Rocky Mountains.

The mounds along the lower Missouri plainly owe their origin to a people whose grade of culture was much inferior to that of the mound builders east and south. The skulls are of low type. The pottery is described by Mr. W. H. Holmes, as follows:

> The pottery obtained by Mr. Fowke from the mounds of the Middle Missouri region is limited in quantity, rude in finish, and generally fragmentary. All the vessels are wide-mouthed pots of medium or small size; nearly all show traces of use over fire. With exception of two specimens the clay is tempered with coarse shells and the walls are moderately thick. The rims of most of the vessels are narrow, upright, or slightly recurved, and are crimped on the margin with the finger nail or with an implement. Rudely modeled loop handles connect the rims with the bodies of the vessels and in a few specimens a slight projection takes the place of the handle. The somewhat globular bodies are decorated in a rude fashion with patterns consisting of incised lines and indentations. On some specimens these are arranged in zigzag series of three or more lines bordered by lines of indents, suggesting the treatment of conventional animal forms characteristic of the pottery of the middle and lower Mississippi valley. On a few vessels the designs are impressed rather than incised while others are excavated as with a gouge. The instrument employed was probably tubular in form, possibly the leg bone of a turkey or a deer.
>
> One small vessel (no. 24), neatly wrought, about five inches in diameter, is of a variety distinct from the preceding. The surface is fabric-marked, the meshes of the cloth used being quite small.
>
> Another specimen of northern type (no. 64) corresponds closely with pottery obtained from mounds in the vicinity of Davenport, Iowa. The tempering is siliceous and the surface has been decorated by means of a square-toothed roulette, the lines of indentation extending round the shoulder and body of the vessel.

The methods of interment, as a rule, show but little reverence or respect for the dead.

At least two diverse stages of culture are suggested and certainly more than one period of occupancy, but boundaries and periods of time can not yet be determined.

In not one of the graves opened was there found any object not of aboriginal manufacture. While this is negative evidence, it is true, it would indicate that the burials antedate the arrival of whites in the country where the vaults are found, if they did not precede the period at which the tribes constructing these vaults may have had dealings with the first traders who could have brought the white man's wares into the country.

The earliest history or tradition we have of this region shows it was inhabited by the Siouan Indians. Unless they may have made their interments in the manner set forth, we must forever remain ignorant concerning the people to whom these graves are due.

Under the title "Omaha Sociology," J. Owen Dorsey says:[a]

> When the ancestors of the Omahas, Ponkas, Osages, and several other cognate tribes traveled down the Ohio to its mouth, they separated on reaching the Mississippi. Some went up the river, * * *. The rest went down the river * * *. The tribes that went up the Mississippi were the Omahas, Ponkas, Osages, and Kansas. Some of the Omahas remember a tradition that their ancestors once dwelt at the place where Saint Louis now stands; and the Osages and Kansas say that they were all one people, inhabiting an extensive peninsula, on the Missouri River.

It is also said that "on this peninsula was a high mountain;" Dorsey supposed the location to be in the northern part of Saint Louis county. Several large mounds are situated on top of the bluffs a short distance above the mouth of the Missouri; one of them is low and flat topped, as if designed for an assembly place, or for the foundation of a large building.

> Subsequently, these tribes ranged through a territory, including Osage, Gasconade, and other adjacent counties of the state of Missouri, perhaps most of the country lying between the Mississippi and the Osage Rivers. The Iowas were near them; but the Omahas say that the Otos and Missouris were not known to them. The Iowa chiefs, however, have a tradition that the Otos were their kindred, and that both tribes, as well as the Omahas and Ponkas, were originally Winnebagos. * * *
>
> At the mouth of the Osage River the final separation occurred. The Omahas and Ponkas crossed the Missouri, and, accompanied by the Iowas, proceeded [north] * * *.[b]

According to Dorsey's map, the Osage went up the Osage river, on whose course, near the Missouri-Kansas line, they were living after the Louisiana Purchase. The Kansa Indians followed the Missouri river; and it is along their route, as given by Dorsey, that the stone vaults have been found. The "Indian House," and the two similar vaults in Pike county (p. 73), all that are known at present away from the immediate neighborhood of the Missouri, may owe their origin to a temporary colony from that stream, whether Kansa or others. Warrensburg (p. 74) is only about 30 miles south of the Missouri.

On Marquette's original map of his voyage of 1673 and later[c] the Osage, Missouri, and Kansa are placed in about the same localities where they are noted by later explorers; that is, at the mouths of the Osage, the Grand, and the Kaw, respectively.

Bradbury says:[d]

> The Missouri Indians, from whom the river takes its name, were a prominent tribe of Siouan stock, who appear to have lived originally at the mouth of the river; but

[a] In the *Third Annual Report of the Bureau of Ethnology*, 211, 1881–2, Washington, 1884.

[b] Op. cit., 212.

[c] See copy in Shea's The Discovery and Exploration of the Mississippi Valley, New York, 1852.

[d] Travels in the Interior of North America (in Thwaites's Early Western Travels, v, 56 (note), Cleveland, 1904).

about the beginning of the eighteenth century they moved up to this place [that is, about four miles below old Fort Orleans, near the mouth of Grand river, on the left bank], where their principal village was found by early French explorers.

And further (p. 80):

The Missouris are incorporated with [the Oto]; they are their descendants and speak the same language. * * * A very considerable part of the surrounding country formerly belonged to the Missouris, who were once the most powerful nation on the Missouri river, but have been reduced by war and smallpox.

Another authority[a] shows the "Little Osage Village in 1805," on the south side of the Missouri, in Saline county, between Grand Pass and Malta Bend. The "Missouri Village in 1805" was located in the southwest corner of Chariton county, near the mouth of the Grand river. Neither of these localities is far from the village site at "The Pinnacles" (see p. 82).

On a map dated 1763, which accompanies Charlevoix's Letters (1720), the village of the Missouri is located above Fort Orleans, in about the position of the Osage village as given by Royce.

It appears from all that now can be learned that the Osage Indians never ascended the Missouri farther than the mouth of the Osage river, and as the stone vaults above that point show progressively more skill in their construction we must attribute them either to the Kansa Indians or to some tribe whose name is now lost.

The continuous and extensive changes of channel in the Missouri river, and in the Mississippi below their junction, deprive us of any certainty as to the location of the "peninsula" referred to in the Siouan legend. The narrators naturally would have applied the name "Missouri" to the whole river; that is to say, they would have regarded what we now call the Missouri as the principal stream, because they lived on it, and the Mississippi above the junction as a tributary. So we may not have to go to "the northern part of Saint Louis county" to find the place the tradition calls for.

There is strong evidence that within a comparatively recent period the stream crossed abruptly from the Missouri to the Illinois bluffs and then back to the Missouri side, in a space of a few miles above and below the present levee. Horseshoe and Pittsburg lakes are remains of this former channel. The mounds of the Cahokia group correspond in form and situation with mounds which formerly existed on the site of Saint Louis, and they are not at all of the same type as those nearest them in Illinois—an indication that when built they were all on the western side of the Mississippi, or according to aboriginal ideas, of the Missouri, river. Thus it is quite probable, providing we admit the essential truth of the Omaha tradition, that this is the "peninsula" to which reference is made, and that in the term

[a] See Royce, "Indian Land Cessions in the United States," in *Eighteenth Annual Report of the Bureau of American Ethnology*, pt. 2, pl. CXLIV, 1896–97, Washington, 1899.

"high mountain" we find the linguistic successor of "high mound"—in other words, the towering artificial structure called the Great Cahokia Mound. There is no other locality near the mouth of the Missouri which accords with the description given by Dorsey, certainly no "high mountain," so it is safe to assume that the Siouan tribes were settled for a time on an extensive bottom in front of the present city, with the Mississippi river on the north, east, and south. They may have constructed the small burial mounds found in the county and westward; and when, in their renewed migration, they reached a region where flat rocks were abundant and earth hard to dig, may have evolved the stone vaults.

As no mention is made in the legend of contact with an unrelated tribe, either at that time or afterward, the Mound Builders had no doubt abandoned the site before the advent of the Sioux; otherwise we should certainly have heard of them.

EXPLORATIONS NEAR THE MOUTH OF GASCONADE RIVER

The Granmann Mounds (1)[a]

A mile west of Gasconade, on the farm of Mr. William Granmann, were three earth mounds, two of which stood about 40 yards apart, on the edge of a bluff overlooking the Missouri.

MOUND NO. 1

The mound farthest west measured 37 feet in diameter and 3 feet in height. A space 30 feet in width, extending from the south margin to a line midway between the center and the north edge, was first cleared away to the subsoil, which lay at a depth of from 10 to 12 inches. On the bottom, near the center, were a number of bones, of which only a humerus, a tibia, and two femora were in condition to be identified. Some of the bones showed indentations and striations produced by gnawing, after burial, by mice or other small animals.[b] Such markings are found on many bones unearthed from mounds along the Missouri River bluffs, and fragments of bones so marked are occasionally found at some distance below the bottoms of the mounds, having been dragged there by the rodents, some of whose burrows are indistinct or even obliterated.

The only implement found in this mound was a rough flint knife, which lay loose in the earth.

---

[a] Corresponding numerals designating the several areas of excavation dealt with in this paper will be found on the map (pl. 1).

[b] Incisions of this character are sometimes reported as evidence of the cutting or scratching of bones with sharpened or pointed implements, indicating cannibalism, or of attrition by glacial action, either directly by ice, or indirectly by floods resulting from its melting. In the latter case, bones could hardly have found their way into any aboriginal burial place.

MOUND NO. 2

This mound was 43 feet in diameter and 5 feet in height. Lying 8 feet east of the center and 6 inches above the bottom was a crushed, decayed skull, the few teeth remaining with it being much worn. Beginning 2 feet nearer the center was a deposit of other bones too much decayed for identification with exception of short pieces of femora and tibiæ. These bones lay on different levels within the space of a foot, occupying an area about 4 feet in diameter.

At the center was an irregular hole 14 to 16 inches in diameter and a foot in depth. Filling this hole, and extending above and around it, was a deposit of mingled charcoal, soil, and burned earth, which had been brought here from a fire near by.

FIG. 1. Pot from Granmann mound no. 3.

Lying west and north of the center, on the bottom, distributed over a space approximately 1 foot by 3 feet, were the charred bones, in very small fragments, of at least two, possibly of three, persons. Among these remains were a bone and a claw of a panther. All were covered with earth much burned, mingled with charcoal and soil, as if the débris of the pyre had been thrown on them. Close by was a fragment of a femur or a tibia; also a skull from which the entire upper jaw had been removed before burial. All the unburned bones were very soft and much decayed.

MOUND NO. 3

This mound stood on the first bluff west of Gasconade. After having undergone much cultivation it measured 75 feet north and south by 50 feet east and west, and 5 feet in height. Beginning 25 feet south of the apex, a trench 16 feet wide was run toward the center. Four feet from the starting point and a foot above the bottom was found a crushed and decayed skull, having its vertex toward the south. With exception of four teeth, no traces of bones accompanied it. At a distance of 2½ feet to the north of this skull, situated 6 inches higher, was another skull; this lay on the left side with the vertex toward the east; resting on this cranium was a part

of one femur, while other fragments of leg bones lay just in front of the face. Loose in the earth, 6 inches north of the last described skull and the same distance above it, was a broken pot (fig. 1) having a capacity of about 1½ pints; there was a hole in the bottom, apparently intentionally made.

Fourteen feet from the assumed center of the mound, near the east side of the trench, pieces of a pot were discovered. Seven feet nearer the center and a foot above the bottom lay, as if thrown from a basket, a confused mass of skulls and of bones of the hips, legs, and arms from three or four bodies. There were no small bones among them. Nearly all these bones were fragmentary from the effects of decay and pressure, only a few of the long bones being entire and these very fragile.

Two large trees had stood on the site of this mound before it was built, the holes left by the decay of their roots branching out through the soil.

Although the excavation was continued for 27 feet beyond the point last mentioned, or 45 feet in all, apart from the remains above described nothing but an occasional flint or chip, fragment of pottery, or scrap of decayed bone came to light.

The Ruegge Village Site (2)

Near Stolpe, on the right bank of the Gasconade, four miles above its mouth, is a village site located on the Ruegge farm. The owner pointed out various places, especially one stretch of about 50 yards along the top of a gentle slope, where "the ground is white with shells whenever we plow." As the field was under cultivation, no excavations were made.

A single lodge site on the river bank near the edge of this field was carefully examined. Fragments of pottery, flint chips, and mussel shells were unearthed in considerable quantities, but at no point did these extend to a depth greater than 4 or 5 inches. Of the objects found, only one flint and a piece of hematite once used as a paint stone were worth preserving.

The Uffman Mound (3)

A mile east of Gasconade, on Mr. George Uffman's farm, on a point nearly 400 feet high, stood a mound of mingled rocks and earth 30 feet in diameter and 3 feet in height.

In the central part of the structure was a vault 8 feet 6 inches long and 5 feet 4 inches wide (inside measurements), built of sandstone slabs laid vertically to a height of about 30 inches. The main axis ran nearly northeast and southwest. Along the south side, on the original surface, was a pavement 6 feet in length by 2½ feet in width,

made of slabs, terminating 14 inches from each end; in the southwest corner was a space 1 by 3 feet where no stones had been placed. No reason was apparent for the existence of this pavement. There was considerable charcoal mixed with the earth which filled the vault, but no trace of bones or of worked objects appeared.

The walls, partially demolished by former investigators, were held in place by rocks and earth piled against the outside surface. The interior of the portion of the walls remaining in place on the north side and at the west end is shown in figure 2. It will be observed from this figure that two parallel walls were first built, the other two walls being so constructed subsequently that the ends of each interior wall abutted squarely against the faces of the others.

FIG. 2. North and west walls in Uffman mound.

THE BIRKLE MOUND (4)

Two miles east of Gasconade, on a high point on Mr. Robert Birkle's land, stood a mound having a base measure of 40 feet east and west, 50 feet north and south, and an elevation of 5 feet. Originally the base was circular, the alteration in form being due to long cultivation.

The central portion was cleared out by a trench, or pit, 20 by 24 feet. A slab of chert, weighing about fifty pounds, from a stratified rock, lay on the bottom at the center, evidently having been placed there intentionally, and a few sandstone and limestone blocks lay scattered about in the earth.

Not a scrap of bone or other evidence suggestive of the presence of a grave beneath the original surface was found in the excavation, though the peculiar color characteristic of "grave earth" showed that bodies had been deposited in several different places.

The Smith Mounds (5)

On the east side of the Gasconade, a mile above its mouth, on the farm of Mr. Christian Smith, were four earth mounds on the crest of a narrow ridge lying between the river and First creek. Two of these mounds were examined.

MOUND NO. 1

The first mound, a hundred yards from the river bluff, was not more than a foot high. A space in the center 12 feet in diameter was cleared out. On the surface, at the west edge of the excavation, were a few fragments of a partially cremated skull, teeth, and long bones. Three feet south of these were fragments of two skulls showing no marks of heat, and a few small pieces of burned bone. In the center was a grave pit $3\frac{1}{2}$ feet in diameter and slightly more than a foot deep, which contained no trace of bone or relic. Scattered over and around this grave were several limestone slabs ranging from 5 to 25 pounds each in weight; these seem to have been thrown in at random, having had apparently no connection with funeral ceremonies. The earth in the grave was very hard, as if packed in while damp and then tramped or pounded down hard.

Fig. 3. Pipe from Smith mound no. 2.

MOUND NO. 2

The second mound, 40 yards east of the first, was 3 feet high and 40 feet in diameter. A circle having a radius of 10 feet from the center of the mound was marked off, and the earth within this removed down to the subsoil. At the southwest margin of the excavation were found the decayed bones of a skeleton, which lay extended, with the head toward the east, 6 feet from the center. On the northwest side leg bones extended beyond the excavated portion; other bones, including parts of two skulls, lay in confusion from 8 to 10 feet from the center. Extending eastward from this mass for about 3 feet were still other bones, whose original position could not be determined; these included many small pieces of at least two partially cremated skulls (one thick,

one thin), long bones, and one piece of a child's rib. There was also the stem of a clay pipe so poorly burned that it fell apart. At the east end of the deposit was a clay pipe (fig. 3). The earth about these bones and at various other points within the excavated area was as hard as if once puddled. As in most mounds in this neighborhood, there were chips and spalls of flint, and fragments of human and animal bones scattered about loose in the earth.

MOUND NO. 3

On the highest point of the hill which separates the creek from the river is a mound 40 feet in diameter and 4 feet in height, built of earth and stones in about equal proportions. Relic hunters had dug a trench from the south margin to a point a few feet beyond the center. At one end of their excavation a few rocks, held in position by roots of a tree, remained to indicate that a vault, or burial chamber, had once existed, the walls of which were thoroughly demolished. Examination of the undisturbed portion showed that a considerable amount of rock had been piled against the outside of the east wall to hold it in position. The west and north walls, however, were not thus protected, being kept in place by earth. The method of support for the south wall could not be ascertained. The mound had not extended more than a foot above the highest stone of the vault.

No material was found in this mound except a few potsherds and a small piece of skull in the disturbed earth.

EXPLORATIONS ABOUT THE MOUTH OF OSAGE RIVER

THE EWING MOUNDS (6)

On the farm of Mr. Paul G. Ewing, a mile and a half west of Osage City, seven mounds stood along the brow of a hill facing Roisden creek, which flows at the foot of the western slope. All these mounds had been reduced by cultivation.

MOUND NO. 1

Mound no. 1, that situated farthest south, was 34 feet across and 3 feet high. A foot below the top and 2 feet south of the center were three limestone slabs covering an area of a square foot; nothing was found under them. On the same level, at the center, lay a decayed skull, the teeth of which were much worn; mingled with the fragments of this skull were the point of a bone awl, a small finely wrought flint drill, three small fragments of flint, and a rude hammer stone; no other bones were with or near the skull. A foot below the level just mentioned were the feet bones belonging to another body, which had been interred with the head toward the east. In the same

plane with these bones, lying 3 feet farther north, was a single fragment of a long bone.

MOUND NO. 2

Mound no. 2, measuring 40 feet in diameter and 3 feet in height, stood 70 feet north of mound no. 1. A space 12 by 20 feet was cleared out around the center. A foot above the bottom, 6 feet southwest of the center, lay a skull. On the same level, a foot farther north, another skull was unearthed, while a foot higher, 4 feet west of the first, a third one came to light. To the north and west of these crania lay other bones. All were so soft as to be less coherent than the earth in which they were embedded; often only the color, or ash-like patches, remained. At the center a skull was found, and a foot to the south of it another one, both on the bottom. Accompanying the cranium last referred to was the crown of a molar, having cusps not at all worn; this was the only tooth found in the mound.

MOUND NO. 3

Mound no. 3, situated 80 feet north of no. 2, was 40 by 45 feet and 5 feet high. Eight feet south of the center and 1½ feet above the bottom a number of small flat rocks, laid in the same manner as a pavement, covered a space 1 by 2 feet. Beneath these, grayish-colored earth indicated a burial, probably that of an infant. Nothing else worthy of mention was found in the mound.

MOUND NO. 4

Mound no. 4, which stood 70 feet from no. 3, was 25 feet in diameter and 2 feet in height. A number of small flat rocks, which had been plowed up, lay on top. On the bottom lay an extended adult skeleton 5 feet 8 inches long, with the head toward the north; the feet lay just east of the center. The bones of this skeleton were so soft that they adhered to the earth when it was removed; all the teeth had disappeared. A foot above the bottom, beginning at the center and extending east and south, was a layer of limestone slabs occupying a space 18 by 60 inches; nothing was found under them.

MOUND NO. 5

Mound no. 5, 200 feet north of no. 4, measured 25 feet in diameter by 2 feet in height. From 6 to 8 feet south of the center, on the original surface, was a layer of stone slabs extending north of east by south of west 2½ by 5 feet (pl. 2). These formed the cover of a grave from 16 to 20 inches deep, in which were remains of either one or two infants, including part of a jaw in which the teeth had not come through the bone.

Parallel to these slabs, and on the same level, 2 feet farther north, lay on its back at full length an adult skeleton, with the head toward the east. About the center of the mound, a foot below the present top, were a number of stone slabs covering an area 1½ by 4 feet; no remains of any kind were found under them.

MOUND NO. 6

Mound no. 6 stood 175 feet northwest of no. 5. It measured 45 by 50 feet, the longest diameter extending from southeast to northwest, and 6 feet in height. A trench 16 feet wide was started southwest of the center. Stones were soon encountered, extending from the bottom to within a foot of the top. At first view these seemed to be piled at random, as part of the mound, but when all the earth above and around them had been removed, they were found to cover a space approximately rectangular, 17 feet north and south by 18½ feet east and west, measured on the diameters. The east margin was irregular, while the three other sides were nearly straight (curved slightly outward) and the corners rounded.

About the center and toward the south margin were areas free from stones. The removal of the deposited earth from the first of these areas disclosed the interior of a vault or chamber made of slabs roughly laid up, as in a foundation or cellar wall, the bottom layer resting on the natural surface. The interior of this vault measured 7½ feet east and west by 4½ feet north and south. The walls were as true and the corners as square as they could be made with undressed stones. The west, north, and east faces measured from 2½ to 3 feet in height. The south face was much lower, being nowhere more than a foot high, in places consisting of only two layers of stone. The breadth of the wall on top was fairly uniform all around, varying but slightly either way from 2 feet.

The open space on the south side measured 11 feet in length by 2½ feet in width; it was inclosed by a row of flat stones, which circumscribed the main vault and were in contact with its walls on the west, north, and east sides. The width of this border was from 2 to 3 feet, being greatest on the north; in some places only one stone was laid, in other places as many as four stones, one on another, but nowhere to a depth of more than 8 or 9 inches, on a foundation of banked earth 18 inches high.

At the middle of the vault was a single row of stones extending 3 feet east and west by 1½ feet north and south; between these and the north side were a few others which had been either loosely thrown in or had fallen from the wall. All these stones, except the ones lying farthest toward the east, rested on a mass of burned earth a foot thick which extended to the west end of the vault; the condition of this deposit was not due to a fire made here, the earth having been

STONE GRAVE COVER IN MOUND NO. 5

VAULT IN MOUND NO. 6, LOOKING NORTH

FEATURES OF EWING MOUNDS NOS. 5 AND 6

brought in from the outside. Beneath this burned layer were remains of a closely folded skeleton; the tibiæ lay against the north wall, while the feet lay toward the east and the head toward the southwest. East of these bones, at the same level, were small fragments of skull. Along the south wall, beyond the limits of the burned earth, a body or skeleton, evidently that of a child, or at least of a young person, had been placed, with the head toward the west and the other bones, even those of the feet, almost in contact with it; the skull was quite thin. East of the skull were found other bones, but whether these belonged to the above or to some other human skeleton is uncertain, as only small fragments of any of them remained.

On the original surface three or more bodies, extended, had been covered with a foot of earth, upon which in turn at least two others had been placed and similarly covered. One skeleton of each burial lay so close to the north wall that fragments of bone were forced into the crevices. The only evidences of these interments were a number of fragments of long bones.

In the northeast corner, under the edge of the wall, was a clavicle, one end of which had decayed and disappeared; this, no doubt, was an accidental deposit, as its position indicated that it did not belong with any other bones discovered.

In line with the outer face of the supplementary wall along the south side of the vault, midway between its ends, and a foot lower than the bottom rock, a skull lay in close contact with a thick flat stone; the vertex was turned toward the south, both maxillaries were absent, and no other bone was found near it except a single humerus, which lay on the other side of the stone and obviously had no connection with the cranium.

South of this skull, entirely outside of the inclosure, were a large slab and two small ones, evidently intentionally placed, but nothing remained to indicate their purpose.

Under the southeast corner of the stone wall circumscribing the vault lay a crushed skull, on the lower part of the face of which rested a thick rock. The teeth were sound, but much worn. From the position and condition of bones near by, it was inferred that only part of a skeleton had been interred here.

All bones of adults discovered indicated persons of medium size.

The interior faces of the vault were held in place by from two to four stones set at each corner, as if for markers, the intervening spaces being filled with stones laid up in a rough wall; these in turn were held up by earth piled against them. A clear idea of both the interior and the exterior arrangement of the vault may be had from plates 2 and 3. On the completion of the funeral ceremonies, the vault was filled with earth, on which stones were piled, the whole

then being covered with earth to form the mound. No doorway or other opening, as found in vaults excavated later, existed in this instance, but the south wall was very low and probably the entire end was left open until the burials had been made.

MOUND NO. 7

Mound no. 7 stood at the end of the ridge, 85 feet north of no. 6; it was 22 by 30 feet, with the longer axis from north to south, and 4 feet high. The presence of many stones scattered over its surface indicated an interior construction similar to that just described.

Within this mound undisturbed stones covered an area 14 feet north and south by 14½ feet east and west. A central inclosure 6 feet north and south by 9 feet east and west, in which no stones occurred, proved to be the vault. In this vault, a foot below the top of the mound, was a skull; nearly a foot lower, two skeletons, extended, with the heads toward the east, were uncovered, while at various points from 6 to 10 inches apart vertically, extending to the bottom, were fragments of nine more skulls and of many other bones. So large a proportion of the remains had entirely disappeared, and all the bones found were so decayed, that it was impossible to segregate the various parts of any particular skeleton or to determine whether certain bones belonged to one skeleton or to several. Each pile may have contained remains of more than one person. At one point, in the fourth layer from the top and a foot above the bottom, was the skeleton of a child of about 6 years of age, having the skull much decayed and most of the other bones missing; at the neck were eleven beads, drilled lengthwise, made from the columella of a large sea-shell, ranging from slightly less than an inch to nearly an inch and a half in length. In five different places were small fragments of partially cremated human bones, including all parts of the frame. The remains of one infant had been cremated, the residue being laid together in a little pile; the deposit was about the color of wood ashes, as were a few of the other remains, but most of them resembled charcoal.

One of these deposits was of special interest because of an apparent attempt to place the partially incinerated fragments in their proper relative positions on and in contact with another body, or perhaps a skeleton in which the cartilages still held the frame firmly together at the time of interment. The skeleton lay at full length, on the natural surface, with the head toward the east. Fragments of the two crania were intermingled, as were other bones, down to and including those of the feet. The bones of one foot (except the toes) and a portion of the lower leg of the partially cremated skeleton, though burned black entirely through, were found in nearly their natural order, as if the flesh had baked or hardened in the fire sufficiently to

IN MOUND NO. 6, LOOKING SOUTHWEST

IN MOUND NO. 7, LOOKING NORTHEAST

VAULTS IN EWING MOUNDS NOS. 6 AND 7

hold them together until they were laid on the corpse (or skeleton) previously placed on the ground.

It appears, then, from the foregoing that at this stage of the excavation the fragments of separate skulls brought to light gave evidence of not fewer than seventeen burials, including the cremated remains, and there may have been a greater number.

On the north side the bones extended beneath some large stones; the latter may have fallen from the top of the wall, as may other stones at the east and west ends.

When fully cleared out, the vault measured at the bottom $8\frac{1}{2}$ feet east and west by 7 feet north and south. The highest point of the wall, at the southwest corner, was 4 feet above the bottom of the lowest stone; the lowest point was on the west side, where the wall was only 18 inches high.

In the south wall was a doorway, shown on the right (pl. 3), 31 inches wide at the top and 15 inches wide where the sides most nearly approached each other, these dimensions affording evidence that the vault had been completed first and the bodies or bones carried in, rather than that the inclosure had been built up around the remains. Further proof of this fact is furnished by the discovery, not only here but in other vaults, of fragments of bones crowded into crevices by the settling of earth which lay over and around them.

Two skulls, one having teeth not at all worn, the other having some teeth worn down nearly to the roots, lay on the bottom close to the north wall. Near the center of the vault, in a small depression 6 inches deep, were pieces of another skull. Across the east end, reaching to the wall on each side and separated by a space of 22 inches, were placed two large slabs on the south and three on the north, laid one on another, as seen in plate 3. Between these and the east wall was a space $6\frac{1}{2}$ feet north and south by 10 inches east and west. Occupying part of the space in the opening between these slabs and part of that in the chamber behind them, was found a shallow hole containing the remains of an infant only a few months old.

Unlike that in no. 6, the vault wall in no. 7, from top to bottom, consisted of a single thickness of stones held in place by earth piled against the outside during the building. There were some stones in this earth, but these had been thrown in at random as a part of the supporting material, not laid up separately. Rocks were not to be had near at hand, and the workmen probably tired of carrying them from the adjacent ravine. In a few places the wall did not reach down to the natural surface, but rested upon deposited earth, as may be observed in the case of the large stone on the far side of the doorway, in the illustration. This was especially noticeable at the

northeast corner, where there was at least a foot of dumped earth below the bottom stones. In this earth were found several scattered fragments of a skull, a clavicle, an upper rib, and part of a jaw—all of which were more solid and strong than those buried within the vault, perhaps from being better protected. Under a stone at another point lay the broken lower jaw of an adult, with no other bone near it. In close proximity to the fragments first mentioned, extending under the wall from its inner to its outer face, were unearthed a humerus, fragments of a hip bone, a vertebra, ribs, and a scapula, all lying as if thrown in at one time with a load of earth. Clearly these last three deposits were gathered up with earth, possibly from shallow graves, and dumped in promiscuously.

Outside of the vault, lying close to the wall at the northeast corner, were two small pieces of skulls, one of an adult, the other of a child.

North of Mr. Ewing's house, on the edge of a bluff rising abruptly from the Missouri river, were 6 mounds, all in the primitive forest. Four were opened.

MOUND NO. 8

The mound farthest west was not more than a foot high. A crushed, decayed skull lay 4 feet north of the center, with a few fragments of long bones (one a femur) 2 to 3 feet north and northwest of it. There were no traces of other bones. A few potsherds and flint chips lay loose in the earth, some of them on the original surface.

MOUND NO. 9

The third mound in this series, 200 yards northeast of the first, was 35 feet in diameter and 3 feet in height. At the center was a grave dug a few inches into the subsoil, in which lay the remains of two bodies, extended in the same direction, with the heads toward the east. Only the skulls and leg bones were left, and these were very soft and fragmentary. The teeth of one skull were much more worn than those of the other. Nothing was found with them, and there were no other remains in the structure.

MOUND NO. 10

The fourth mound, 65 feet northeast of the third, measured 40 feet in diameter and 5 feet in height. A space 22 feet wide was cleared out around the center. A foot below the apex were portions of a femur and a tibia, probably intrusive; near the center, at the bottom, a portion of a skull was discovered, lying on the left side, facing west. Nothing else was found in this mound.

MOUND NO. 11

The last mound of this group was 200 yards east of the fourth. It measured 30 feet in diameter and 3 feet in height. The presence of fragments of bones at the bottom indicated that two bodies had been placed on the natural surface and the mound erected over them.

One of the two remaining mounds had been thoroughly ransacked. The other, which is 7 feet in altitude and slightly more than 50 feet across at the base, being very symmetrical and commanding an extensive view up and down the river and over several counties, was left intact in compliance with Mr. Ewing's wish.

In all these mounds were found various objects, as flint chips, potsherds, and hammer stones, thrown in with the earth and having no special significance.

THE DALLMEYER MOUND (7)

On a farm owned by Mr. W. A. Dallmeyer, situated between Roisden and Moreau creeks, 5 miles east of Jefferson City, are 20 mounds, which vary greatly in size, the smallest being not more than a foot high; the dimensions of the largest are given below. Five of these mounds cap a bluff rising steeply from the Missouri; 15 are in a line along the crest of a higher ridge about 200 yards from the river. Only the largest structure in the latter group was explored.

This extended 72 feet east and west by 40 feet north and south, with a height of 5 feet. Originally the top rose in two points or peaks, as if two mounds had been started so near together that they overlapped in the course of building; but it had been reduced by cultivation until at the time of excavation, viewed from either end, it presented the ordinary "conical" or dome shape, while from the sides the top appeared level to the end slopes.

The middle of the mound was cleared out by means of a trench 20 feet wide and 50 feet long, dug to the subsoil.

Midway between the ends were two graves, extending east and west, about 2½ feet apart. Measured from the original surface level, the one on the south was 4½ feet long, 18 to 24 inches wide, and 16 inches deep; in outline it much resembled a moccasin. Along the north side of the depression lay an extended human skeleton having the head toward the east. Only portions of the skull and of the long bones remained; these were very soft. The cusps of two molars were not worn in the least, and the other teeth only slightly so. The presence of fragments of skulls and a few teeth on the south side of the grave showed that it had contained a second body. At the southeast corner or curve were one sandstone block and two chert blocks, the largest about 25 pounds in weight, laid in contact, and at the south end was a rough piece of chert weighing about 15 pounds; all these were on the north edge of the bank.

The north grave, extending east and west, was 7 feet 5 inches long, 3 feet 7 inches wide, and 5 feet 6 inches deep. Here the aborigines had to dig through nearly 5 feet of tough clay, which must be loosened with a pick before a shovel can be forced into it; possibly they worked only when the ground was wet. The sides and bottom of the grave were rough and lumpy, and it had evidently been excavated with pointed implements of small size, as bone, antler, or sharpened sticks hardened by heating, used as picks, prods, and levers, the marks of such tools showing in the hard earth.

On the bottom lay extended, on its back, with the head toward the east, a skeleton 5 feet 9 inches long. No ribs or phalanges and only two or three cervical vertebræ remained; the skull was soft and crushed, as were the fragments of long bones remaining. The teeth were not much worn. Near the top of the head was a mussel shell, which crumbled when touched; at the neck were nine disk shell beads, with fragments of others and of mussel shell. Opposite the center of the grave, against the north wall, were teeth of a child not more than 2 or 3 years old.

Twenty inches above the graves (placed there when the mound had reached that height) were the skull and large bones of an adult, carefully piled in as small a space as they could be made to occupy. The skull and the lower jaw lay in diagonally opposite corners of the pile.

On the natural surface, 20 feet from the foot of the west slope, was a thick block of limestone, weighing perhaps 150 pounds, with three smaller rocks lying against it; but there was nothing to indicate their purpose. Loose in the earth were a rough hammer stone and a few flint chips. There was nothing else in the structure—no evidence of two centers, or of more than one period of construction.

Numerous other mounds lie along the river bluffs on both sides of Moreau creek, and also near the mouth of Osage river. Results in this vicinity had been so discouraging that none of these were opened.

MOUNDS IN THE VICINITY OF HARTSBURG, BOONE COUNTY

The Shaw Mounds (8)

A mile southeast of Hartsburg, on the farm of Mr. James Shaw, a spur from the table-land, projecting toward the south, practically level along the top and sloping abruptly on each side, expands toward its outer extremity to a width of about 750 feet. This spur ends in a rugged descent to a precipice facing the Missouri River bottoms. Extending in a line nearly east and west across the end of the spur, the outer margins reaching down on the slope above the bluff, were 8 mounds. Five stood near together at the western terminus of the nearly level area. Three of these were never more than 2 feet high;

the other two were 3 and 4 feet high, with diameters of 35 and 30 feet, respectively. The distance from the easternmost to the largest two of the group was 300 feet. Two hundred feet still farther east was the last mound, lying below the beginning of the eastern slope.

All the mounds were composed mostly of clay, which is exceedingly hard to remove even with a pick; in places there was sand or softer earth. As in all mounds opened in this vicinity, the center was not the focal point. The pottery was in small pieces; bones were soft and more or less decayed, not one being entire. Various stone articles, some only partially wrought into form, others much worn by use, were found scattered in the earth; among these were arrowheads, pieces of hematite, rubbing stones, polishing stones, knives, and spearheads.

MOUND NO. 1

The most western mound of the group was nearly effaced. The central portion was cleared out to the extent of an area 8 feet across, to undisturbed subsoil; no trace of a burial was found. On what seemed to be the natural surface were a flint knife or spearhead and a broken pitted stone.

MOUND NO. 2

In the next mound, a circular area 16 feet in diameter was cleared out. At the center, 18 inches above the bottom, were fragmentary bones of an adult skeleton, lying extended with the head toward the west. The skull was fully one-fourth of an inch thick; no teeth accompanied it. Parts of two smaller femora were with these bones, above which a number of small flat stones was placed, but not in such manner as to cover them all.

Nothing else was found in the body of the structure. Beneath it were two graves. One, 5 feet west of the center, measured 5 by 3 feet; it was not regular in outline, being longest approximately from north to south, and somewhat more than a foot deep. The filled earth was extremely hard and tough, almost of the consistency of wax. A pot of about half a gallon capacity had stood upright at the south end, but was crushed by pressure. It was of a pattern not found elsewhere during these explorations, having a cylindrical neck, round body, and flat base. The neck and bottom were punctate, and the sides were decorated with indented curved lines. Clearly, this vessel was not made by the artisans to whom may be attributed other mound specimens figured in this report.[a] The decoration some-

[a] It is the opinion of Mr. W. H. Holmes that this vessel is intrusive in this region or with the tribes represented in the sites examined, and that it came by exchange from the tribes of eastern or southeastern Missouri, or was the work of some member of those tribes dwelling among the more primitive peoples farther north and west. It is especially noteworthy that the pottery represented in the collection, with the exception of the vessel here referred to, is exclusively culinary, consisting of rude globular-bodied pots generally showing marks of use over fire, and decorated with symbolic incised or indented designs. The principal motive consists of a series of broken zigzag lines or meanders, bordered by dotted indentations, doubtless symbolizing some animal form having a superstitious relation to the use of the vessel.

what resembles that of pottery in Saline county (see fig. 19), but the form differs from any yet found there. Nothing else was found in this grave.

The second grave, halfway between the center and the northern margin, was rectangular in shape, 7 feet 6 inches long east and west, 3 feet 4 inches wide, extending 21 inches into the subsoil, or about 30 inches below the natural surface. On the bottom lay on its back an extended skeleton, with the head toward the west. Only portions of bones were left, but enough to determine that the body was less than 6 feet in length. One foot from the left side of the head, toward the north, was a pot with a flaring top and globular bottom, holding about a pint. Being poorly burned, it crumbled when exposed. Near the pot was the front part of a lower jaw, the ramus on each side purposely having been broken away. Five molars remained, the sixth having disappeared with the missing bone. All the other teeth had fallen out or had been extracted either after death or shortly before, as there was no evidence of growth or closure of the bone, and the sockets were filled with earth. About the pelvis were part of another jaw, a vertebra, and a bone from the foot, lying as if thrown on the body either intentionally or with a load of earth. There were indications, though not conclusive, that the graves were filled and small mounds made over them separately, and the larger mound subsequently built above both of these.

MOUND NO. 3

In the third mound a few fragments of human bones lay loose in the earth here and there; all these were accidental. Around the center, 18 inches above the bottom, was a mixed mass of ashes and burned earth, extremely hard, scraped together elsewhere and thrown here. It covered a space about 4 by 5 feet, and was a foot deep at the maximum. All through this layer, especially in the east half, were small cindery fragments of human bones, which must have been subjected to great heat for a considerable length of time after the flesh had disappeared, to be so thoroughly charred and reduced to so small pieces.

On the same level, 3 feet south of these fragments, were bunched bones; and on the red clay subsoil one to two feet southeast of the latter lay other bones, indicating a folded body or skeleton. Four feet east of the center, at the bottom, was most of the upper part of a skull with no other remains near by. None of these bones were burned. Midway between the center and the south margin was a grave 7 feet by 3 feet 8 inches, having the greatest length east and west, and 20 inches deep, reaching well into the hard subsoil. On the bottom lay two extended skeletons, with the heads toward the west. There were several inches of clear space between the bones and each end of

the grave. With the femora of the two skeletons was part of a smaller one. By the right humerus of the skeleton toward the south lay another humerus, likewise smaller, and by its chin, a patella. These additional bones had not been thrown in with the surrounding earth, but had been laid with care where found. The skull toward the south lay on its left side. The other, near the north side of the grave pit, rested on the vertex, which was crushed in; the lower jaw, inverted, lay on the right shoulder, with the chin turned toward the breast. A few of the bones held their form, but went to pieces when the supporting earth was removed. For 2 feet from the east end of the grave, scattered promiscuously through the earth, were dismembered bones, all small or medium in size, of two or more persons. Among these, the entire frame was represented; there were 3 humeri, and parts of at least 2 skulls. When put here some of these bones were whole, others in fragments; they lay in all directions and at all angles. Evidently an old grave, or graves, had been robbed to furnish part of the material for filling this one.

MOUND NO. 4

Fully three-quarters of the fourth mound was barren of anything worth noting. Between northwest and southwest from the center was a cartload of hard-burned earth, almost like brick, mixed with charcoal and loose soil. In this was a little pile of partially cremated bones, in small pieces, of a child 3 or 4 years old. In another pile were parts of a thick and a thin skull, a short piece of a femur of an adult, and the lower end of a humerus of a child 10 or 12 years old. Each pile occupied a space not more than a foot across, and a stone weighing 15 or 20 pounds lay at the edge of each. Pieces of a broken pot were found loose in the earth.

MOUND NO. 5

In the fifth mound, a flint scraper and a small flint digging tool, highly polished, lay loose in the earth. A foot west of the center was the end of a grave, irregular in shape, which extended 3 feet east and west, 2 feet across, and a foot into the subsoil. This contained a few scraps of bone, among which were teeth not at all worn.

MOUND NO. 6

In the sixth mound much of the earth in the upper part was soft and could be shoveled like sand, but elsewhere, particularly in the lower part, it was exceedingly hard.

About the central part, a foot below the top, were fragments of burned femora; on the original surface lay a small pot broken into little pieces. Just south of the center a few detached bones were

found near the bottom, among them the left half of a cranium. These were thrown in loosely with the earth covering a skeleton, which lay extended, with the head toward the west, the remaining portion of the skull lying over the pelvis. The body rested on the clay subsoil, but no definite outline of a grave could be distinguished. A side-notched hoe, or hatchet (fig. 4), 5½ inches long, was found loose in the earth near the head.

Northeast of the center, on the bottom, lay a small rough pot, having a row of little points or bosses encircling the rim, and corresponding depressions on the inside (fig. 5). Three feet north of the center was the edge of a rectangular grave, approximately 7 feet long, 3½ feet wide, and 18 inches deep, the longest dimension being nearly northwest and southeast. On the bottom were two extended skeletons, with the heads toward the northwest; only portions of bones were found. The teeth of one skull had entirely disappeared; a few much worn, accompanied the other. Between the two skulls were the pieces of a thick pot of not more than half a pint capacity, which had lain on its side. Around the upper part was a row of small circular indentations made by pressure with the end of a stick or reed.

FIG. 4. Flint digging-tool from Shaw mound no. 6.

MOUND NO. 7

The seventh mound was the largest of the Shaw group, measuring 55 feet nearly east and west by 45 feet across, and 5 feet above the highest point at its edge. The apex, which is here regarded as at the center, was several feet northwest of the middle point within the margin. The base of this mound and that of the last preceding one overlapped somewhat.

An excavation 30 feet long and 20 feet wide was made to conform with the outline of the structure.

Four feet southeast of the center, 3 feet above the bottom, were four skulls in contact; with them were two bowl-shaped pots, one of about a gallon, the other of less than a pint, capacity. The teeth in all the skulls indicated adult age, one set being worn nearly to the roots. One lower jaw, with its normal complement of teeth in place,

had another set embedded in the bone. The effect of wear on the crowns was very unequal.

Above the skulls was a mass of earth a foot thick, filled with bones lying in all positions, which apparently had been gathered up in baskets and thrown here at random. Among them were bones and teeth of a child 3 or 4 years old.

Above this deposit was a foot of earth free from remains, and above this, again, a wagon load or more of earth, some portions of which showed no marks of heat, while other portions were burned to a brick-like hardness. This deposit covered a space 5 or 6 feet in diameter; it had no connection with the bones or with any other deposit, having been put in as a part of the structure. The earth had not packed firmly, coming out under the pick in large clods.

At the center, 2½ feet above the bottom, were three skulls close together. The teeth indicated various ages, some being much worn, others only slightly worn; one wisdom tooth was not cut. There were also teeth of a child 7 or 8 years old, and of a very young infant. Under one of the skulls lay a pot, and fragments of a pot were near another skull. All about these skulls, though mostly toward the south and west, lay a mass of detached bones, seemingly thrown in with the earth, which covered a space 6 feet in diameter. At one place femora lay parallel, as if a body had been deposited there; and at another point a femur, a tibia, and part of a pelvis were in the proper positions; there were no other indications of ceremonies except those pertaining to loose-bone burial. No estimate could be made of the number of bodies represented, but there were certainly not fewer than twenty. Near the center, among the bones, were two pots in addition to those already mentioned.

FIG. 5. Pot from Shaw mound no. 6.

East of the center, on different levels, and 2 feet apart, were part of a lower jaw in which the wisdom tooth was not through the bone, and a small piece of a thin skull. Similar finds were made in several other parts of the mound.

Southwest of the center a grave had been dug, not penetrating the subsoil at one end but sunk into it 5 or 6 inches at the other end, to make the bottom level. In this grave were traces of two skeletons of medium length, having small bones, lying with the heads toward the northwest. At the foot of the grave were much-worn teeth; a little higher was part of a jaw with the last molar not at all

worn. Of the skulls, only part of the top of one and part of the orbit of the other remained; but these were solid and strong, the latter especially so, having a smooth polished appearance as if it had been much handled.

Near the center, just above the bottom, lay loose in the earth a lower jaw of a young person, well polished. It is not unusual to find bones, especially skulls, which seem to have been long preserved and much worn by rubbing or carrying around. Three or 4 feet from the jaw was the right half of a frontal bone, with the orbit, of a young infant.

MOUND NO. 8

The eighth mound was almost effaced. On the ground were a piece of a tibia and a broken columella. No grave could be found.

THE DAWSON MOUNDS (9)

On the farm of Mr. A. R. Dawson, a mile west of Hartsburg, were 15 mounds. Two of these, situated on a high point from which the ground slopes in every direction, have been much ravaged and were not examined. The others ranged in close order along the winding crest of a narrow ridge or spur, whose general trend is from northwest to southeast; this slopes gently on one side toward Bonne Femme creek, and more steeply on the other to the Missouri River bottom land. On the latter side, toward the foot, are bluffs which forbid ascent except at two points, where ravines are eroded. The longer axis of those mounds, which had an elliptical outline, followed the direction of the ridge at the points where they were located. In each mound opened every part was excavated except a narrow strip around the margin.

MOUND NO. 1

This mound was the farthest from the end of the ridge; it measured 70 feet in length northwest and southeast, 35 feet in width, and 3½ feet in height.

At a distance of 12 feet west of the center was a pavement of limestone slabs, 13 in number, covering a space 26 by 40 inches, the greater dimension being exactly in line with the major axis of the mound. Most of the slabs were broken by the weight of earth resting on them. Apparently they had been supported by some perishable material whose decay allowed them to settle unevenly into a small pit, dug to a depth of 8 inches in the soil, in which lay on its back, with the head toward the southeast, a closely folded skeleton; the knees were brought up to the chest, the feet were in contact with the hips, and the face was turned to the left. The joints in the sacrum were closed solid and the teeth were much worn. The lumbar vertebræ and some of the cervical vertebræ were still firm enough to be

lifted from the earth; most of the others had completely disappeared. Portions of only two or three ribs could be found. Near the skull were a few flint chips. A fine quartzite muller, and part of another, lying on the natural surface a foot to the west of the stones, were probably accidental.

From 2 to 4 feet north and east of the center, piled on the surface over an area 18 by 36 inches, lay bones in the utmost confusion; these included parts of skeletons of five adults and three children, one of the latter an infant.

MOUND NO. 2

This was 125 feet southeast of mound no. 1; it was 60 feet long, 20 feet wide, and 18 inches high. No sign of a grave or trace of bones was found in it.

MOUND NO. 3

This was 117 feet east of south from mound no. 2; it measured 75 by 35 feet and 3½ feet high. From 7 to 9 feet northeast of the center was a grave cover of six slabs, occupying a space 20 by 42 inches, the latter representing the distance north and south. The grave was dug a few inches into the subsoil and at the bottom measured 3 feet 6 inches by 2 feet; the rocks did not cover it entirely at either end or on the west side. In this grave a closely folded body had been laid, on its left side, with the head toward the south; the face was turned so that the chin was brought upward and toward the rear in a position it could not have assumed, in a person of normal build, by any degree of displacement possible after burial. The spine was curved and twisted and the upper end lay under the skull. Clearly, the individual was badly deformed. The bones were too soft to be properly uncovered for photographing. The teeth, though large, were but slightly worn. A small rock lay on the south end of the grave, its edge almost touching the skull.

Another grave lay south of the one last mentioned, east of the center, the nearest stones of the two graves being 17 inches apart. This was covered with four slabs extending 4 feet north and south and 2 feet 6 inches east and west. Under these lay a skeleton, on its back, with the head toward the south; the legs were drawn up so that the feet rested against the body and had settled over to the left. Of the spinal column only three lumbar vertebræ remained; the femur was 16½ inches long; the teeth were very little worn.

Eleven feet south of east from the center, less than a foot below the top, were four slabs covering a space 1 by 2 feet. These were inclined toward the east at an angle of 45°; no remains of any sort were found under them. Ten feet south of the center, just below the sod, were nine small stones irregularly laid, occupying a space 2 feet east and west by 20 inches north and south. Nothing was found under them.

Seven feet farther south were fragments of long bones, close to the top, which evidently had been disturbed by the plow, as they lay in all directions. Beneath these was a sacrum, other vertebræ extending southward therefrom. Vertebræ are usually the first bones to decay. The body had been laid on its left side, with the head toward the south; no trace of cranium or scapula was left. Close by were small fragments of pottery.

At the bottom of the structure, 20 feet south of the center, was a hematite nodule which had been rubbed to procure paint material.

MOUND NO. 4

This was 110 feet south from no. 3. It was 65 by 35 feet, the longest diameter running north and south, and 4 feet high.

Sixteen feet northwest of the center, just below the original surface, were five teeth of an adult and eight of a child, with a piece of seashell and a scrap of bone too small to identify. Eight feet north of the center, 6 inches below present top, were portions of skull and arm bones. Five feet west of north from the center, in a hole dug to the subsoil, lay a skull on its right side, the top to the south, with the left side crushed in. The cranium was of low type—the forehead flat and receding, the jaws extremely prognathous, the facial angle and cephalic index very small.

South of this skull, with 6 inches of earth intervening, were parts of skulls and arm bones of two children, one of them not more than 2 years old, and part of the skull of an adult. Teeth of all three were present. Seven feet west of the center, 20 inches above the bottom, were leg bones, in slivers, and pieces of teeth, of an adult. Six feet south of the center, just below the sod line, five small stones covered a space a foot in diameter. Under these were the bunched, much decayed, hip and leg bones of a small person. Twenty feet south of the center was the inner edge of a grave cover of nine stones (pl. 4) on a space 2 by 3½ feet, the greater dimension being east and west. The inner ends of these had fallen from their original surface level into a grave 18 inches deep, with slanting sides. In the bottom of the grave were a few very soft fragments of skull and long bones. Twenty-eight teeth were large, solid, well preserved, and but slightly worn; two of the wisdom teeth were represented by the crowns only and the other two had not developed.[a]

MOUND NO. 5

This was 130 feet east of south from no. 4. It was 78 feet long, extending nearly north and south, 34 feet wide, and 3 feet high.

[a] Contrary to current belief, it is very unusual to find a full set of sound teeth in an aboriginal grave, even in the case of a comparatively youthful person.

At the center, a few inches under the sod, were two small angular rocks, beneath which were fragmentary bones of an infant. A foot farther west, on the bottom, were portions of a child's skeleton, with the head toward the east; the teeth were not worn in the least. Lying close to the sod, 6½ feet west of south from the center, were eight rocks distributed over a space 22 by 46 inches, the latter representing the distance north and south. Beneath these lay on its back the skeleton of an adult, with the head toward the south; the legs were flexed and lying to the right. A fracture of the skull above the inner angle of the right eye, such as would be caused by a blow from a round stone or the blunt end of a tomahawk, was no doubt the cause of death.

Twelve feet south of the center, a foot above the bottom, was a broken pot with a square top, resembling that shown in figure 1, except that the bottom is somewhat pointed.

Ten feet east of south from the center was a mixture of burned earth and charcoal, filling a hole where a stump a foot in diameter had burned. In the débris was a core of chert from which several flakes had been struck off. On the natural surface, 21 feet south of the center, were fragments of teeth and bone from an individual whose wisdom teeth had just been cut.

MOUND NO. 6

This mound was 115 feet east of south from no. 5. It measured 75 feet long, north and south, and 40 feet wide; the height was 4½ feet.

Twenty-four feet west of north from the center, 30 inches above the natural surface, were fragments of arm bones, and of a skull three-eighths of an inch thick. Four feet nearer the center, 18 inches above the bottom, was the edge of a grave cover consisting of 24 slabs and blocks covering a space 4 feet east and west by 3 feet 4 inches north and south. Under this lay on its back the much-decayed skeleton of an adult of medium size, with the head to the south; the legs were flexed and lying over to the left. Only traces of bones remained. The teeth were moderately worn.

Thirteen feet west of the center, 18 inches above the bottom, traces of bones appeared, for the most part resembling ashes. Of the skull, which had belonged to an adult, only the top was left. By its left side was a bowl of soft-burned red pottery, much broken by earth pressure. Seven feet south of the center, 2½ feet above the bottom, were small, much decayed pieces of long bones.

Eleven feet northeast of the center, a foot above the bottom, was a pile of bones consisting of two femora, three tibiæ, a patella, and one fibula. A femur and a tibia lay side by side, at the top of the pile, the knee ends together, with the patella in its proper place. The

knee of the other femur and the ankle of one tibia (the two being crossed like a narrow X) lay under the hip and ankle joints of the first two. The third tibia was under the latter two bones; beneath it, in turn, parallel to those at the top, was the fibula; the lower end of this fibula, or, if not, the corresponding end of still another fibula, was broken off and lay under the uppermost femur.

The description of this interment, if it properly may be so called, is thus elaborated to give the reader a perception of the singular practices of which the explorer is continually finding evidence. It is quite obvious that these bones were entirely denuded of flesh before being deposited, and that the manner in which they were arranged was intentional and in accordance with some ceremony or belief whose significance must be altogether a matter of conjecture.

A foot above the bottom, 7½ feet west of the center, were teeth of an infant and small shells, all very much decayed. Five feet north of the center, 3 feet above the bottom, were arm or leg bones, too fragmentary to uncover in position; 2 feet south of these, no doubt belonging to the same skeleton, was a skull lying on its left side, with the face toward the west; the teeth were worn flat.

On the bottom, 9½ feet west of the center, was a skull resting on its left side, with the top toward the south; the bones belonging with it lay, bundled, toward the north, presenting every evidence of skeleton burial, the vertebræ being under the leg bones, which lay compactly together with the knee end of a tibia touching the head of a femur. The teeth were worn flat.

Eight and a half feet west of the center was the north end of a pavement of thirteen slabs, the largest in average size yet found, covering a space 3 feet 10 inches north and south by 2 feet east and west. Under these slabs, on the natural surface, was the extended skeleton of a woman, lying on its back, with the head to the southeast, the face being turned to the left. Lying at the vertex of the skull, as if worn in the hair, were many shell beads having the border of the opening ground off. At the right side near the waist line were similar beads, and fragments of a skull which had belonged to an infant only a few months old. The few small pieces still remaining of the woman's right arm lay in a position indicating that it was extended to hold or protect the body of the child; the left forearm lay across the waist. There were no stones over the feet, the right knee, the infant's remains, or the part of the skeleton above a line running from the left shoulder to the right hip; but they extended beyond the body on the left.

At the center, in a hole dug a foot into the subsoil, was an adult skull lying on its left side, facing southwest; in a compact bundle, lying against the face, were all the bones of two legs. South of these, extended in natural position, were bones of a small person; the feet

were turned toward the west, and the skull, having teeth much worn, was in its proper place. Fragments of the pelvis were traced, but no additional bones of either skeleton remained.

Two feet above the bottom, 5 feet southeast of the center, was a pile of bones which included ribs, arms, legs, and skull of a child. The lower jaw lay teeth upward, with the chin against the back of the skull, which rested on its left side, with the face toward the east. Only a few of the second teeth were through the bone.

On the bottom, 8 feet east of the center, was a decayed skull; no traces of bone were found near by.

Nine feet southeast of the center, on the natural surface, were a few teeth not at all worn. Eleven feet south of west from the center, 18 inches above the bottom, was a flat rock 12 by 18 inches. Under this lay the fragments of an inverted pot, and close to it, but not under the stone, was a "cocoanut pot"[a] of a pint and a half capacity.

Twelve and a half feet east of the center was the end of a grave cover extending 6 feet toward the southeast; its width was 2 feet 4 inches. This was composed of 17 large slabs, which had sunk in along the middle line, as the result of the decay of supporting timbers. Under these were 5 other slabs or blocks of stone, one at the top of the head, one against the right shoulder and the side of the head, and the others by the side, of a skeleton which lay on its back on the natural surface, with the head toward the southeast. The right hand was at the breast, the left hand on the neck; the legs were slightly flexed and lying to the left. This skeleton was the largest and best preserved yet found; from crown to ankle, as nearly as could be determined, it measured 5 feet 9 inches. The shoulders appeared to be of unusual breadth, but displacement prevented accurate measurement. Between the right elbow and hip lay the shoulder blade of a deer and fragments of a thin, dressed bone apparently from the same animal. Most of the skull was crushed and decayed, though a portion of the front part, and the lower jaw, were fairly solid. In the upper jaw were 16 teeth, all sound except 1 bicuspid; in the lower jaw, 15 of the regular set, besides 2 supernumeraries, one of which has its crown on the same level with the others, the remaining one being embedded in the bone (see fig. 20).

Fourteen feet south of the center were 42 stones, the bottom rock resting on the natural surface; these varied in weight from a pound to 50 pounds. They were rudely piled to a height of 18 inches over a space extending 4 feet 6 inches northeast and southwest with a breadth of 2 feet 6 inches; the pile may have been higher originally, as the upper stones had been disturbed by the plow. The interspaces

[a] By "cocoanut pot" is meant one having a pointed bottom, resembling in shape a cocoanut with one end cut off. In some specimens the top is more or less flaring. Many of the pots or vessels found in this region are of approximately the size above mentioned, and most of them, whatever the size, are of the shape described.

were closely packed with earth. Under the stones were a few fragments of a child's bones; not all the teeth were cut; about the head were beads made of small sea-shells.

In a few places in this mound, as in other mounds along the river, were dark lines or streaks resembling old sod, indicating that these mounds were built intermittently; certain burials were made, and afterward other interments were made above these. This feature is not unusual, some tumuli containing evidence of several periods of building.

MOUND NO. 7

This mound was 133 feet southeast of no. 6.

From the apex to the bottom of the slope measured 20 feet; the height was 4½ feet. Several large rocks were scattered over the slope.

Seven feet west of south from the center, a foot above the original soil, were small leg bones; a foot nearer the center were larger ones. Five feet from the extremities of these, or about south of the center, were fragments of two skulls. The teeth of the one in line with the larger bones were much worn, while those of the other were worn but slightly. In each skull at least one tooth was not worn at all, indicating early loss of the tooth opposite. Close to the smaller skull was a small pot. Stones were found at various points near the top of the structure. Removal of all the earth over and about these stones disclosed part of a vault, constructed by setting large flat rocks on end around three sides of a space nearly square, about 6 feet each way, the southwest side, that toward the river, being left open.

All except the southeast wall and a portion of the northeast wall had been destroyed by relic hunters. The portion left is shown in plate 4. The southeast wall was braced at the bottom on the outside by earth on which were placed flat stones, as seen in the figure. Nine feet west of the center, a pavement of two large and two small slabs constituted the remaining bracers of the northwest wall. The vault seems to have been made for the two bodies mentioned, as no other burials were found in it. Whether by accident or design, the vault was not properly "centered," being situated entirely in the southwest half of the mound, on the verge of the steep slope, with the earth covering mostly to the northeast.

When all the stones were removed and the earth was leveled, the east corner of a grave was found 2 feet 8 inches south of the center. This grave was somewhat irregular in outline, but rudely rectangular along the top, measuring 6 feet 10 inches northwest and southeast by 3 feet 4 inches across. It had been dug through the surface earth and 16 inches into the hard sandy subsoil. The lower part was more regular in form than the upper, the sides and ends being nearly

STONE GRAVE COVER IN MOUND NO. 4

SOUTHEAST AND PART OF NORTHEAST WALL IN MOUND NO. 7, LOOKING EAST

FEATURES OF DAWSON MOUNDS NOS. 4 AND 7

straight. Fragments of bone were found here and there on the bottom, but only a fragment of skull near the west end and two worn teeth near the center could be identified as human. Some of the bones seem to be those of a deer; there was also a piece of turtle or terrapin shell. Beside the skull were fragments of a pot. The east end and corner of this grave lay beneath the end of the wall; before being molested the vault had covered probably half of it.

MOUND NO. 8

This mound was 70 feet south of east from no. 7. It was 25 feet in diameter and 18 inches high.

At the center was the east end of a grave dug into the hard subsoil, in which was a decayed skull with a pot on each side. One of these pots, which stood upright, held its shape, although badly fractured; the other lay on its side, being crushed flat. In the bottom of the latter pot was carbonized matter, apparently vegetable, and the tooth of a deer. The grave extended west about 6 feet; here and there were traces of bone, including half the shaft of each femur. Southwest from the center 6 to 7 feet were fragments of bones, two skulls being represented; beside one of these were the small fragments of a pot.

At the same distance to the east was the inner side of an area 3 feet 4 inches north and south by 18 inches east and west, covered by six stones; these were somewhat below the natural level and had partially settled into a grave dug into the subsoil. In this grave, with the head toward the south, lay the skeleton of an infant whose first teeth were not through the bone and whose clavicle was only $2\frac{1}{4}$ inches long.[a]

MOUND NO. 9

This mound was 50 feet approximately east from no. 8. It was 35 by 45 feet, the longer axis extending south of east, and 3 feet high; the natural slope had been much altered by cultivation.

On the natural surface, 6 feet east of the center, was a skeleton about 5 feet 6 inches long, extended on its back, with the head toward the south; on the left side of the skull was a pot, standing upright, but broken into several pieces by pressure. An entire pot, also upright, was found 7 feet west of north from the center, at the bottom.

At several points projecting rocks, apparently belonging to segregated graves, were distributed over an area 30 feet east and west,

[a] In many cases bones of very young children are found in a much better state of preservation than those of adults. The skull of this infant, though not thicker than ordinary blotting paper, and much fractured and distorted by pressure of earth, was not crushed, and a larger proportion held together than is usual with heavier bones. While the deficiency of lime accounts for the plasticity, it would seem that this must result in a more rapid dissolution and disappearance of the animal matter.

with a maximum breadth of 21 feet, reaching nearly to the east margin of the mound. When cleared off, these rocks were found to lie entirely to the west of the center, there being but few in the eastern half, and those superficial. At the top the rocks were in the form of a rough wall of irregular height, inclosing a space 9½ feet southeast by 7 feet northeast. The northeast wall was straight for 8 feet 9 inches; the northwest wall for 4 feet 10 inches; the southeast wall for 4 feet 9 inches; the two corners of these three walls were somewhat rounded. The southwest wall, 10 feet long, had a tolerably regular outward curve. The above dimensions are all inside measurements; the corresponding outside measurements were: Northeast wall, 11 feet 6 inches; northwest wall, 6 feet 6 inches; southeast wall, 7 feet 6 inches; southwest wall, 14 feet.

The general appearance of this vault, on the outside, before the supporting earth was removed, is well shown in plate 5, *a*.

FIG. 6. Pot from Dawson mound no. 9.

In clearing out the vault, fragments of human bones were found scattered through the earth from top to bottom. There were parts of 12 skulls, and fragments of 5 pots, the latter entire when placed here but now much broken by pressure, besides numerous potsherds. Two of the pots, one upright (fig. 6), one inverted, were near one skull. Beside one of the pots were part of a human ulna and three leg bones of a panther. The vault was 2 feet 9 inches deep from the top of the highest stone to the bottom of the lowest stone. In the southwest wall was a space 24 inches wide, filled with earth, in which no stones appeared except three slabs along the outside, set up against the earth. This was the doorway or entrance to the vault, the stones in the wall at each side of it being regularly laid up (pl. 5, *b*, *c*).

Along the bottom, the inside of the vault was nearly rectangular, the walls being about as straight as they could be made with undressed stones. The length on the bottom from northwest to southeast was 8 feet 7 inches; the breadth 3 feet 11 inches. The northeast wall was composed mainly of seven slabs, inclined slightly from the perpendicular to rest against the supporting earth outside; the largest slab was 36 by 19 inches; the longest, 41 by 16 inches. The

a EXTERIOR OF VAULT

b LOOKING SOUTHEAST ACROSS VAULT

c DOORWAY IN VAULT

FEATURES OF DAWSON MOUND NO. 9

distance between their extreme outer edges was 7 feet 10 inches. Four of these slabs may be seen in plate 6, which shows also the inside face of the northwest wall. The other sides were built up wall fashion, of smaller rocks, most of them lying flat, though some were found slightly inclined on account of the unequal settling of the earth against which they rested.

In this vault, as in all others investigated during the first summer, the walls leaned slightly outward, making the chamber wider at the top than at the bottom, proving that, as each rock or row of rocks was placed, earth was piled against it. In fact, many stones must have been held up until the supporting earth was packed under them, since when it was removed nearly every one fell outward. This was especially true of the long slabs at the northeast, which rested against a bank of earth containing only the single row of rocks along the top. Yet the walls were so nearly vertical as to exclude the idea that earth was piled up first and then stones laid. The building of both parts must of necessity have progressed concurrently.

At the northwest end, on the bottom, were two rocks—a slab 12 by 36 inches, and a block of about the same weight; these appeared to have fallen in from the top, though their position might have been the result of design. At the southeast end were three stones on the bottom, reaching to each side wall. The clear space between these stones was 6 feet 4 inches. When they were removed, the distance along the floor of the vault between the end walls, with which they had lain in close contact, was 8 feet 7 inches.

The northeast wall stood partly over a grave pit measuring 9 feet from northwest to southeast and 4 feet in width. The outer part of the northeast vault wall extended diagonally across it from the orth to the south corner. At the natural surface level, lying on the earth with which this grave had been filled, was a skeleton 5 feet 6 inches long, extended on its back, with the head to the southeast. The teeth, though sound and strong, were considerably worn. The earth which covered these bones was that which held in place the slabs of the northeast wall.

The grave was shallow and dish-shaped. On the bottom lay an extended skeleton 5 feet 4 inches long, with the head to the southeast. The teeth were worn flat, and the skull, though well shaped, was small.

MOUND NO. 10

This mound, 50 feet east of no. 9, was 32 feet in diameter and not more than a foot in height.

Loose in the earth were a side-notched, very rough chert implement, evidently intended for a hoe, and a specimen which from its leaf-shaped form and its size would be classed at once as an ordinary

knife, except for a considerable polish on its broader end, resulting from use as a digging tool.

At the center was a grave of irregular outline, 4 feet from northwest to southeast, 2 feet across, and 2 feet deep. The earth in the grave was extremely hard and tough. On the bottom lay a skeleton; the head was at the northwest end, resting on the left side, with the face turned toward the other end. Across the top of the skull lay part of an arm bone; the pelvis was near the center; the legs were at the southern end, close together, but not in proper order, the knee end of one being at the hip end of the other, affording evidence of a skeleton burial. The bottom of the grave was 12 or 14 inches wide.

MOUND NO. 11

This mound stood 56 feet southeast of no. 10. Its diameter at the base was 50 feet, and its height from 6 to 9 feet, according to the side on which the measure was taken from the surrounding slope. On the surface lay a few stones, which had been plowed up in the only attempt made to cultivate the mound.

A grave a few inches beneath the summit contained an extended skeleton, lying on its back, with the head to the southeast. The body rested on flat rocks forming a pavement about 2 feet wide; other slabs were inclined outward around these, the outer edges, raised 6 or 8 inches, forming a shallow, basin-like grave. Timbers had been placed across this to support covering slabs which, when unearthed, lay at various angles directly on the bones; these bones were much broken and crushed and badly decayed, and the teeth were worn flat. The entire space covered by the stones, most of which were large and thick, was 6½ feet southeast and northwest by 5 feet in width.

Beneath the northwest end of this grave, with several inches of earth intervening, was a skull, face up, the vertex being toward the northwest; the forehead and part of one side were burned, but other parts showed no marks of heat. The teeth were moderately worn. Directly under the skull were a femur, tibia, and fibula, and at the waist line several teeth, some worn to a considerable degree, some not at all worn, and one burned black. Southwest of the skull were other bones in small fragments. Outside and below the level of the south corner of the grave were fragments of a skull. This cranium, like the one partially burned, lay about 18 inches below the top of the mound. On the same level, a little south of the burned skull, were fragments of another, the outer plate burned black, the inner plate browned. Just beneath the former was a pile of cremated bones, with pieces of three pots, all lying in confusion. A foot southwest of these were fragments of another pot; a few inches north of this

was a clay pipe (fig. 7). Extending northwest from the three pots were burned bones whose position showed that an effort had been made to place them in proper order; but various discrepancies, as a patella by the head of a femur, showed they were cremated elsewhere and brought here. The bones of the lower legs were less burned than the femora, and the latter in turn less than the skull and upper parts; but the feet resembled charcoal. These bones and pots lay in a mass of hard-burned, brick-like mixture of clay and sand; the leg bones were partly in this and partly below it in mingled earth, burned earth, charcoal, and ashes—additional evidence that the cremation had taken place outside. The burned material extended beyond the remains on all sides. Clearly the earth on which the funeral pyre was erected, and perhaps more prepared for the purpose, had been gathered up and made into a sort of coffin and covering; the pots, possibly containing food, had been placed beside the fragments of skulls. In one pot was the head of an adult's femur.

FIG. 7. Pipe from Dawson mound no. 11.

FIG. 8. Pipe from Dawson mound no. 11.

Under the clay pipe were bones burned until porous as cinder and sparkling like jet. These were slightly below the level of the highest stones in the vault wall, and belonged to two bodies which had been laid side by side, extended, with the heads toward the southeast, and burned on the spot. At the outer side of each skull was a pot; between the skulls was another. All these pots were upright, filled with earth.

Under one of the skulls was a pipe made of soft white material, much like chalk; in shape this somewhat resembles the "monitor" type (fig. 8).

This was the last object found above the vault walls; below it lay only soil, filling the vault to the top. All the remains thus far discovered bear no relation to the original character of the structure, but pertain to a subsequent ceremony.

At the bottom of the vault were remains of a number of bodies and skeletons, which had been placed on the bare ground after several inches of the upper soil had been scraped away. At least six of the bodies were cremated; the others showed no signs of burning. The funeral rites for some of the former remains were conducted outside, and such portions of bone as were not destroyed by fire were gathered up and thrown in piles, each lot to itself. Near the northeast side three bodies had been laid extended, in close contact, on the back, with the heads toward the southeast; then a fire had been kept burning over them until all the bones were converted to charcoal. One of these bodies was that of a young person; three bone beads were found at the neck. Beside another of these skulls was a pot. While all three skulls were broken into many small pieces, they still held their shape fairly well. They were filled, or nearly filled, with earth which had worked its way into them, and as the material above was burned so hard that it had maintained its position, the fragments had not fallen apart.

In the north and south corners were unburned bones, which had almost disintegrated from the effects of decay. Those to the south were mingled with partially cremated bones. There was likewise a little heap of burned bones, in small pieces, in the west corner, presenting the appearance of having been swept or scraped together, as, indeed, was the case with nearly all such bones except those partially cremated where found. Among the bones were one whole pot and fragments of several others. An unburned frontal bone bore indications of artificial flattening, but the specimen was so small as to make this inference uncertain.

The entire space between the side walls at the southwest end of the vault had been left free for entrance and exit until the burial ceremonies came to an end. It was then closed with mingled earth, ashes, and charcoal, piled as high as the walls and just within them, so as to leave the ends slightly projecting. On the outer side this material was held in place by stones placed slantingly against it. On the south side of the doorway, leaning against the wall, was a slab 62 inches long, 12 to 17 inches wide, and 7 inches thick. The lower end was sunk 10 inches below the natural surface (see pl. 6). On the opposite side of the doorway another rock, wider but shorter and thinner than that just described, had been set with its edge against the northwest wall. The open space between these two rocks, in their undisturbed position, measured 5 feet 6 inches.

NORTHWEST WALL, INSIDE, IN MOUND NO. 9

SOUTHWEST END IN MOUND NO. 11

VAULTS IN DAWSON MOUNDS NOS. 9 AND 11

In taking away the earth that filled the entrance fragments of partially cremated human bones that had been thrown in with the dumped material were found scattered at random; and a walnut log several inches in diameter, burned to charcoal after being deposited here, lay near the inner face, midway between top and bottom.

When fully cleared out the vault measured from northeast to southwest 14 feet at the top and 9 feet on the bottom; from northwest to southeast, 12 feet at the top, 7 feet on the bottom. The height of the wall on every side was the same, 3 feet 2 inches to a line representing the average height of the tops of all the stones.

MOUND NO. 12

This mound was 112 feet nearly southeast of no. 11. Its measurements were 70 feet northwest and southeast, 30 feet wide, and slightly less than 2 feet high. At the center was a shallow hole of somewhat irregular outline, about 3½ feet in diameter, in which was a mass of bones lying in confusion. Among these were three skulls, in which the teeth were worn very little or not at all; in one jaw some of the teeth were not cut. There were no other remains in the structure.

MOUND NO. 13

This mound was 130 feet nearly south from no. 12. It was much the largest of the group, being 50 feet in diameter, with an original elevation at the center of at least 10 feet.

The presence of many stones thrown out by previous investigators hinted at a central vault or stone graves.

Southwest from the center 12 feet was a pot-shaped hole a foot in diameter, dug 16 inches into the subsoil. Directly south of it was a another hole similar in size and appearance; the adjoining margins were about a foot apart. Both cavities were filled with loose earth, and there was nothing in or about them to give the slightest clue to their purpose.

A distance of 13 feet nearly north of the center were the feet of a skeleton which lay extended on the back with the head to the southeast. The feet bones, even the smallest bone of the toes, were solid and strong; the bones of the right leg were sound, except the upper end of the fibula; those of the left leg fell to pieces when uncovered; the portions of the pelvis remaining—constituting less than half—were soft; there were no traces of vertebræ or of upper extremities; of the skull enough was left to mark its location, but not, alone, to determine its character; there was not a fragment of tooth or even a trace of enamel. This single example furnishes convincing evidence of the futility of attempting to judge by the condition of a skeleton its antiquity, either absolute or relative.

Toward the south margin lay burned bones here and there, too fragmentary to identify, except a short piece of a human femur converted into charcoal.

In the middle of the structure was a vault, a considerable portion of which was in a chaotic state as the result of the efforts of the earlier diggers. Possibly stone graves were made in portions of this mound as in no. 11. However this may be, there was good evidence that a minor or secondary vault had been constructed on top of the earth filling the principal one. So far as could be determined this upper vault was 5 feet 3 inches long inside and 9 feet long outside; it was built on the same lines as the lower or older one. Close to its northwest wall, inside, were several fragments of deer bones, including the leg and the skull. At the bottom, a foot east of the center, was an adult skull, quite thick, but so crushed that its position could not be determined, though it seemed to face northwest, with the vertex toward the northeast. Close to it were beads made of small marine shells, and teeth of a young child. Two feet southwest of the skull were fragments of the lower portion of a pot which had been placed there upright.

When the main walls were laid bare in their entire circuit, there was exposed a structure approximately quadrilateral, with rounded corners. The diameters were 17 feet 8 inches from northeast to southwest, and 13 feet 6 inches from southeast to northwest. Along the outside, between the points where the boundary lines would intersect if projected, the measures were: From south to east corner, 18 feet; from east to north corner, 13 feet; from north to west corner, 15 feet 6 inches; from west to south corner, 11 feet 8 inches. The outer boundaries of stones fell within these intersections as follows: East corner, 3 feet; north corner, 16 inches; west corner, 16 inches; south corner, 15 inches. The height from the original surface of the ground to the highest undisturbed stone in the upper vault was 5 feet 6 inches; to the average level of the top of the slabs of the upper vault, 5 feet; to the top of the original vault, 3 feet 8 inches.

From a point near the north corner to the east corner, thence for 7 feet 6 inches toward the south corner, there was apparently a break in the outer part of the wall, a single row of rocks at the top resting on earth. When this earth was thrown out, the rocks fell. It was soon found, however, that this earth filled the same office as the outer stones at other points, its purpose being merely to support or brace the main wall, and that the outer row of stones along its top had been placed there as the finishing layer.

Near the surface of the earth filling the lower vault was a charred log, apparently white walnut, extending from the east corner, past the center, almost to the opposite wall; this had been burned here,

for while the upper part had become charcoal, the lower side was only scorched.

The northern half of the vault was filled with earth—some hard burned, some only partially burned, the remainder free from traces of fire—whose thoroughly mixed condition showed that it had not been burned where found, but gathered from some place where a large fire had been maintained for a considerable time; a wagonload of it was of brick-like hardness. No remains were found in this deposit or in any part of the vault except near the bottom. Here, in the east corner, were partially cremated small fragments of bones; at least two skulls, perhaps more, were represented, and there were bones from all parts of the frame, mingled as if swept together and thrown into a basket. Among these were two bone beads an inch long; also, in an inverted position, a pot holding a pint, with small projecting points at intervals around the outer edge of the rim. In the south corner, in a pile, partly under a large flat rock, were fragments of cremated skull, vertebræ, and arms. Northwest of these was an extended skeleton, not charred in the least, from which the arms and upper parts were missing. The burned skull was in position to belong to this frame; but it was very clear that all these bones had been burned elsewhere and carried here, since they lay in earth not marked in the slightest degree by fire and entirely unmixed with charcoal or ashes except such as had been thrown in with the bones. There were hard-burned feet bones at the other extremity of this skeleton. Altogether, appearances indicated that the head, arms, and feet had been removed from a body and burned, the remaining parts deposited in their natural condition, and then an attempt made to place the burned bones where they belonged. On the face of it, this supposition seems absurd; the idea would naturally suggest itself that the entire body had been laid down and a fire made over the head and feet only. The objections to this hypothesis are the lack of traces in the earth which would result from the use of fire, and the bunching of the partially cremated arms, vertebræ, and skull, instead of their presence in the places where they belonged.

The entire bottom of the vault was covered with cremated skeletons; the bones were so broken and mingled that it was impossible to ascertain the number, but there were at least a dozen, and may have been twice as many. The loose surface soil had been scraped away before they were deposited; they were then laid on the hard bottom and covered either with the same earth, or with other earth carried in from the surrounding slopes. Flat rocks were lying over a few of the skeletons, but most had no such protection. Some unburned bones were found at intervals, but, from their situation, all appeared to belong with the cremated ones. A few shell beads were found near the center, and there were two entire pots besides the small pieces of at

least two others. All stages, from infancy to old age, were represented among these corpses. The pots seemed to have been placed with or near certain skulls, though this is open to doubt.

The doorway was, as usual, in the southwest wall. The north side was practically vertical; the south side was sloping, either through design or because rocks had slipped down and had not been replaced. (Pl. 7, *a*.) The opening was filled with loose rocks and earth, and slabs were set up against the outside.

The northwest and northeast walls were intact and well laid up. (Pl. 7, *b*.) The southeast wall contained much earth mingled with the stones, and only part of it was found in the original order. This confusion is probably due to the relic hunters, as it is not at all likely the builders would have left the wall in the condition shown in the plate.

The rocks of the inner walls, with the exception of the southwest one, were much smoked and scorched, and some of them burnt; the marks of fire were plainly visible even on stones in the lowest layer. Evidently large fires were made after the completion of the vault and before the filling was begun. No doubt some of the bodies were cremated on the spot, but it was clear that most of them, at any rate, had been burned outside the vault; the hard-burned earth which filled the north end of the vault certainly had been so treated, since small lumps of it were scattered through the earth in the south part in the direction of, and in, and on the outside of, the doorway.

As constructed, the vault measured at the top 13 feet from southwest to northeast, 9 feet from southeast to northwest; on the bottom, 11 feet 2 inches, and 7 feet, respectively. The southwest wall averaged 3 feet 4 inches in height, the three other walls 3 feet 8 inches. The whole structure is well represented in the illustrations.

Every mound of the Dawson group contained more or less worked material loose in the earth, as flint implements, chips, and cores; polishing and rubbing stones; pieces of hematite; fragments of pottery.

Various other undisturbed mounds exist in the vicinity of Hartsburg.

MOUNDS IN THE VICINITY OF EASLEY, BOONE COUNTY

The Easley Mounds (10)

Lying north of Easley post-office, on the Missouri, Kansas and Texas railway, is a narrow ridge curving somewhat in the form of a horseshoe, the two ends coming almost to the railway tracks. The west end of this ridge is a slope, up which it is possible to drive an empty wagon; the other drops off in a vertical cliff. Along the crest are 9 mounds—5 of them near the east end, 4 at the curve. Six of

a LOOKING NORTHEAST THROUGH DOORWAY

b INSIDE THE VAULT, LOOKING NORTH

VAULT IN DAWSON MOUND NO. 13

them were excavated and are numbered in the order in which they were opened, beginning at the point of the cliff.

MOUND NO. 1

This proved to be only a small heap of earth containing no remains whatever, yet it was plainly artificial. It was on land belonging to Mr. Abram Sapp.

The remaining mounds were on land owned by Mr. W. G. Easley.

MOUND NO. 2

The second mound, 390 feet north 60° east of the first, was 11 feet in height and 80 feet in diameter.

Two narrow trenches—one from the west, one from the northwest—were carried in 10 feet and connected by a cross trench. In the latter were found several loose flat stones, not laid in contact or in any particular order. Beneath them, with some earth intervening, was an extended skeleton a foot above the bottom of mound. It lay on its back, with the head toward the south and the face toward the west; the right arm was straight by the side, the left arm across the waist. The bones were large and heavy, the front teeth considerably worn, and the molars ground down on the outer face almost to the roots.

A foot east of this skeleton and 2 feet above it, or near the top of the mound, were fragments of an adult skeleton, the teeth of which were much worn.

Distant 13 feet from the west margin, 3 feet above the original surface, were nine large limestone slabs covering a space 2 feet east and west by 5½ feet north and south. These had evidently protected a body, though no trace of bone could be found.

Near the southeast corner of these stones, a foot lower, were bones of a child a few months old. The body had been placed on the back, with the head toward the south and the face toward the west. On the face lay a decayed mussel shell.

Below the infant's bones, its west edge being directly under and parallel with the east edge of the stones, was a grave extending a few inches into the natural earth. This contained portions of an adult frame having the arm and leg bones extended in their natural position and the feet toward the north, but there was no trace of vertebræ or skull. The shafts of the leg bones were solid, though the ends fell away when they were lifted. The feet extended to the south end of another grave, 8 feet 9 inches long, 2 feet 6 inches wide, 3 feet deep. On the bottom was a skeleton 6 feet long, lying extended on the back, with the head toward the south. Nearly all the bones, though quite heavy, were much decayed. The skull, which was

thicker than usual, lay on its right side, broken in pieces. At the neck were 6 cylindrical shell beads averaging an inch in length by three-eighths of an inch in diameter; under the jaw lay a piece of columella 3 inches long and an inch thick.

On the original surface, just north of this grave, were portions of a skeleton; on the same level, still farther north, the remains of another skeleton. Only a few fragments of either remained.

Loose on the bottom, 15 feet from the west margin, was a pot broken to pieces.

Midway between the north margin and the center was an extended skeleton 5 feet 4 inches long,[a] on its back, with the head lying

FIG. 9. Stone grave-cover in Easley mound no. 2.

north of east and turned to the right; the teeth were worn flat and the angle of the jaw was much rounded. The body was bent to the right at the hips; the left femur was quite crooked.

At a distance of 18 feet west of the center was the outer margin of a pile of stones covering a space 17 feet north and south by 8 feet east and west. These were laid flat on one another, in some places six or seven deep, as if intended to protect a series of graves, but with no attempt at orderly arrangement. The upper layers are

[a] It must be understood that measurements of skeletons are only approximate. As the skull is crushed and the feet bones are displaced in nearly every instance, it is seldom possible to determine their exact limits. The popular notion that "Mound Builders," or indeed aborigines anywhere in the Mississippi Valley, were "giants" is entirely without foundation. Their skeletons indicate a people no larger than those who have succeeded them.

shown in figure 9, looking toward the center. The earth under and among them was very black, but contained no trace of bone or other indications of burial. Similar flat rocks, which are abundant everywhere on the hillsides, were found at many places in the structure; sometimes only 4 or 5, sometimes 20 or 30, placed either as a rude pavement, or superposed to some extent. Under some of these piles were marks of burials; under others, similarly laid, no remains whatever. There were also many stones which appeared as if thrown in with the earth, to fill up. Altogether, at least 25 wagon loads were taken out.

On the west side, near the center, were three graves, parallel, the longer axes extending practically east and west. The north and south diameter of the mound crossed the center of the northern grave and the east ends of the other two. The grave farthest south was covered with rocks so irregularly placed that their purpose was not suspected until most of them were removed. This grave was the largest yet discovered. It measured 9 feet 6 inches in length, 3 feet in width at each end, 3 feet 8 inches in width at the center, and 6 feet 2 inches deep. The corners were somewhat rounded. A step or bench about 16 inches high and 14 inches wide extended along the north side, while across the east end was a similar bench 28 inches high and 18 inches wide. These benches were left for use by the excavators that they might reach the top in throwing out the earth, which was spread around for several feet to the east and the south. On the bottom lay a skeleton, extended on its back, with the head toward the west and turned to the right. Although the bones were in dry sandy earth underlying the loess, they fell to pieces at a touch. The skeleton measured 5 feet 9 inches long. The teeth were sound and showed signs of but slight wear. Under the lower jaw were six small cylindrical shell beads. The tibiæ did not correspond in size or shape; one of them showed marks of disease, being somewhat enlarged, with the posterior surface flattened. Some traces of white walnut were found. This may have been originally over or under the body.

The middle grave lay almost exactly west of the center, its margin 4 feet 6 inches north of that of the first; it measured 6 feet 10 inches long, 2 feet wide, and 2 feet deep. The earth in it was dry and loose, seemingly a perfect preservative of bones; but only minute fragments of wood, resembling ashes, or of bone, resembling coarse cornmeal, remained in a thin layer on the bottom. Distant 19 inches from the west end were teeth of a child. With these were five cylindrical shell beads three-fourths of an inch to an inch and a half long and half an inch in diameter, drilled lengthwise.

The north grave was separated from the central one by a space of 5 feet 9 inches. It was 7 feet 7 inches long, 2 feet 5 inches wide,

and 2 feet deep. The earth filling this grave was muddy, yet, with the exception of the skull, which was crushed flat, the skeleton therein was better preserved than any other found in this work. It lay extended on its back, with the head toward the west; the hands were crossed on the pelvis. This skeleton was 5 feet 7 or 8 inches long.

Lying on the south bank of the last grave, near its west end, were two small flat rocks. Under the west one were fragments of bones too much decayed to identify. Under the east one lay a piece of scraper or small digging tool.

It is quite probable these three graves were intended to be at the center of the mound; either the apex was carried too far to the east in constructing it, or erosion had somewhat altered its form.

Distant 15 feet northeast of the center, a foot below the natural surface, on the yellow clayey subsoil, was a skeleton 5 feet 9 inches long, extended on its back, with the head toward the southeast, and the face turned to the right. The right half of the lower jaw and all of the upper jaw lay on a line where the sternum should have been, the latter having entirely disappeared. The bone above the right orbit showed signs of having been gnawed, so the displacement was undoubtedly caused by mice. The bones of the feet were solid, as were those of the legs except at their ends, the cellular portions being mostly decayed. The portion of the pelvis remaining was soft. There were no vertebræ; the clavicles were partially preserved; the skull was filled with earth and partially destroyed. Apart from the jaws, such bones as remained were in their proper order, except the right tibia, which lay outside the fibula, with its front downward. It was the only entire bone found except some from the feet. The tibiæ were much flattened.

At a distance of 5 feet east of the center was a grave dug to the subsoil, having thin flat rocks laid on the bottom and stood on edge along each side but not at the ends. On the floor were bones of an infant, the head toward the east; teeth were still within the bone; the clavicle was less than 2 inches long. Flat rocks lay over the body. A few inches above its head were fragments of a pot of about a pint capacity, which lay beside the skull of an adult whose body was extended toward the east, and whose feet were near the head of the skeleton with displaced jaws.

Near the east margin, 18 inches above the bottom, under flat stones, was an adult skeleton, on its back; the teeth were much worn. South of this, on the bottom, rested the skeleton of a child of 2 or 3 years, with small flat stones above the head; south of this, again, another adult skeleton, and west of the last, 2 feet higher, that of a young child. All these skeletons lay with their heads toward the south.

The space cleared out in this mound had an average radius of 15 feet around the center. A considerable area on the south and west sides was left undisturbed. Fragments of human bones were found throughout the part examined. Some of these may have been gathered up from old graves; but most of them probably marked where bodies or skeletons had been laid, all the other portions having disappeared. Only those deposits which undoubtedly belonged to interments are described above.

MOUND NO. 3

The third mound, 115 feet north of the second, was 4½ feet high, with an elliptical base 30 by 55 feet, the longest line running north and south. Work was started at the south end. Almost in the beginning bones were found—at the west corner a bundled skeleton, at the east corner 6 skulls in contact. Of the latter 2 were those of children, one of them quite young; the other 4 were crania of adults of various ages.

The entire mound was removed except a narrow strip around the outside. Up to the very margin were piles of stones, only a few in each pile, most of them over fragmentary bones; in some places bones were found without such covering.

A bundled skeleton, the teeth but slightly worn, was near the center line of the mound, 12 feet from the end and less than a foot below the top. With it was a portion of the shaft of a long bone, having a perforation near one end, which shows characteristic markings of aboriginal flint and sandstone drilling and rubbing tools. The edges of the hole are somewhat worn by a cord or thong by means of which it was suspended.

Under some stones near the east side of the mound, 10 feet from the end, were a few small fragments of bone and a much decayed piece of columella drilled lengthwise. Among these fragments was part of an upper jaw in which the crown of the wisdom tooth was below the level of the other tooth-crowns, and showed no trace of wear; the next molar was somewhat worn, while the next two were rubbed flat; these comprised all the teeth that remained. This example illustrates the difficulty or uncertainty of judging age by condition of the teeth. Had these teeth been found separately they would have been ascribed to individuals of widely differing ages.[a]

On the original surface, 8 feet from the south end, were adult human bones in a pile, among which was a skull, crushed flat; here, also, were teeth of an infant and several shell beads.

Near the west side, 15 feet from the end, a foot above the bottom, was a skull, much crushed, lying on its left side, with other bones

[a] Even the first set, or "milk teeth," of children in our own communities sometimes show flattening or chiseling from wear.

under and around it. Near the vertex was a clay pipe, shown in figure 10.

At the center, 6 inches above bottom, was a sandstone pipe which had become so friable that it fell to pieces when the earth was removed from around it. North of the center 3 feet, 18 inches above the bottom, was a fragment of skull, near which lay the fragments of a pot of about a pint and a half capacity. When this was deposited it contained an unfinished pipe of soft rock, now almost disintegrated, shown in figure 11, a rough piece of hematite worked all over with the apparent intention of shaping it into a cone or a hemisphere, and a few small flint chips. Close by the pot were two well wrought flint knives or spearheads and the point of another. Near this pot and flints were upper and lower teeth, much worn, all in natural order, with crowns in contact, as if still in the mouth of a living person; but there was no trace of jawbones or of any other part of a cranium. Close to these were an unfinished granite celt, and a thin flint knife $7\frac{3}{4}$ inches long; these two objects undoubtedly belonged to the same individual and were buried with him; yet the flint is a beautiful specimen of fine, delicate chipping, while the celt is crudely shaped and roughly pecked. There were evidently two burials, the piece of skull first found being fully 2 feet from the teeth; and all the articles mentioned may have belonged either with one or with both.

FIG. 10. Pipe from Easley mound no. 3.

FIG. 11. Unfinished pipe from Easley mound no. 3.

In several other places around the central part of the mound were traces of burials, some indicated by small piles of rocks. Among them, a foot below the present top, was an extended skeleton with

the head toward the south. At one point, not accompanied by bones, was a piece of columella

At the center was a grave pit 8 inches deep, irregular in outline, and 4 to 5 feet in diameter. Fragments of bones found in it indicated bunched or bundled skeletons. The presence of a number of teeth of infants and children and of adults up to a considerable age, denoted at least six individuals. In several instances only the crowns or scraps of enamel were remaining, there being no trace of bone near them. Yet, lying on the bottom of the grave was part of a humerus so solid it could not be broken with the hands—another example, like that of the skeleton in Dawson mound no. 13, of the danger of attempting to fix even the relative date of a burial by the condition of the bones.

Near the bottom, 6 feet north of the center, a pot was found in an upright position. A foot north of it, at same level, was a round-bottomed pot of less than a gill capacity, which fell to pieces; by the latter were part of a jaw and some teeth of a young child. A foot north of the second pot was still another, similar to the first, lying on its side, crushed by pressure. No doubt these pots and nearly all others found under similar conditions were originally placed with bodies of which every trace had disappeared.

FIG. 12. Pipe from Easley mound no. 3.

Near the north end of the structure, a foot below the top, was a folded adult skeleton. The skull lay on the right side, but the femora were nearly upright, extending almost to the sod line, as if the body had been placed on the back with the legs drawn up. Rocks were piled over the frame. The sockets in the right half of the lower jaw were entirely closed. A foot from the skull, toward the northeast, and probably belonging with it, was the clay pipe shown in figure 12.

Immediately under this body was a skull, lying on the right side, with the face toward the east; the lower jaw was in its normal position; the teeth were much worn and decayed. No other bones were found except parts of three cervical vertebræ; under the head were a few small disk-shaped shell beads. Some rocks lay over the head. Many skeletal remains were found thus partially protected, though some had only one stone, or at most a very few, as if for markers, none of them weighing more than 20 pounds, and few of them more than half as much.

Near the northeast margin of the mound, with the head toward the east, lay the bundled skeleton of a youth whose wisdom teeth were not worn in the least, though the adjacent molars were. Two feet

above the bottom, at the north end, were the leg bones of one person, laid in a close pile. On the natural level, 5 feet south of these bones, were teeth of infants or young children, in three different places, but all within an area a foot in diameter. No traces of bones were around them.

No accurate count, or close estimate, could be made of the number of bodies or skeletons unearthed; but there were at least forty.

A greater number of hammerstones and rubbing stones was found loose in the earth in this mound than in any three other mounds opened during the season.

The mound was composed entirely of subsoil or tough clay, very different from the soil of mounds nos. 2 and 4, which were built of surface earth from the narrow ridge and adjacent slopes, leaving only the underlying clay for the construction of the mound now under consideration.

The central grave was probably the nucleus with which this general burial mound began. Not only the deposits of bones at various levels, but also horizontal or slightly curved streaks, like old sod lines, a foot or so apart vertically in several places, indicated varying periods of interruption of the work of construction.

MOUND NO. 4

The fourth mound, 190 feet north of the third, was 10 feet in height and 70 feet in diameter. An area 20 feet in diameter, in the central part, was cleared out. The natural surface and the sod line were very distinct, and as material taken up outside for erecting the structure included both dark soil and yellow subsoil, each separate deposit could be definitely traced. The amount carried at a load varied from half a peck to a peck.

At a distance of 3 feet south of the center, 5 feet above the bottom, was a "cocoanut pot" of half a gallon capacity, which had been placed there entire, in an upright position; the size of the specimen is unusual.

Distant 25 feet from the north margin was the north side of an elliptical grave 8 feet 2 inches east and west, 3 feet 8 inches north and south, at the top, and 18 inches deep. At each end of the grave were four flat rocks, not on the natural surface, but about a foot above it on deposited earth. One of these was half of a sandstone mortar. The yellow subsoil was scattered on the original surface for five or six feet on every side. In places it split off smooth and flat on the under side, because of the presence of a thin streak of white sand beneath it; this does not belong on the hills and was probably carried there from the river and sprinkled over the ground as a part of the ceremony.

A heavy rain had fallen while the grave was still open, and another after it was filled but before work on the tumulus had been begun.

The bottom of the grave measured 6 feet 10 inches long by 3 feet wide. Marks, still very plain, showed the excavating tools were

sharpened sticks, antler points, or dressed flints, used after the fashion of picks or spuds; some of the resultant channels were shallower or with flatter curves than others.

Decayed wood or bark, as loose as dry ashes, covering the bottom of the grave, was all that remained of a floor on which a body had been laid with the head toward the east. Across the grave, resting on solid ground, had been placed poles and split wood to shield the corpse; these had finally given way under pressure of earth above and had settled down at the sides and on the bottom. That they supported the weight for some time was proved by the loose cloddy condition of the earth for 3 or 4 feet above the pit.

The only remaining indication of burial was a small amount of bone dust resembling coarse cornmeal, and a few teeth, the latter from two persons, though they all lay together. Above the upper layer of wood, near one side of the grave, were a few fragments of bone, probably not human.

Distant 4½ feet south from the south edge of this grave and parallel with it was the north margin of another grave. This was 7 feet 3 inches long, 2 feet 6 inches wide, and on an average 13 inches deep. The bottom was very irregular or "lumpy," varying from 3 inches above to 3 inches below a median plane; it was rectangular in form except for the rounded corners; the tool marks here were of the same character as those in the first grave. As in that, too, the sides and bottom were lined with wood, or bark, or perhaps both, and traces of bone found therein were similarly covered.

A foot south of the west end of the second grave was a hole 1 foot deep and wide, and 2 feet long, apparently the grave of an infant, though it contained no remains.

The only artificial objects besides the pot found in the course of the excavation were a hematite paint stone, the broken sandstone mortar, and a few flints, all loose in the earth and not intentionally deposited.

MOUND NO. 5

This mound is at the end of the curve farthest from the river, and was built on the slope instead of on the summit of the ridge. The diameter of base was 65 feet, and the elevation 12 feet. A space nearly circular, averaging 40 feet in diameter, was cleared out to the subsoil; fully 300 cubic yards of earth were removed, nearly all of which had to be loosened with picks before it could be shoveled.

At a distance of 18 feet east of south from the center, 18 inches above the original surface, was the bottom or floor of a stone cist (grave A) containing fragments of an adult skeleton. The skull lay toward the east and projected beyond the stones. At the foot and along each side were stones, some of them set vertical to form the

outline of a grave, others inclined at various angles as if a cover had fallen in. The tibiæ, though in better condition than the other bones, were much swollen as if from rheumatism. Beside the pelvis were fragments of an infant's skull.

West of south 16 feet from the center, 4 feet above the original surface, were decayed pieces of skull and of bones of the feet, about 5 feet apart, with no other bones between them (grave B). A flat stone lay over the skull and several such stones over the bones of the feet; the latter, thus protected from percolating water, were tolerably sound, even to the phalanges. Only a few teeth, not much worn, were found with the skull. A round-bottomed pot of about a quart capacity had been placed upright by the right side of the chest. At the left side of the head, at a slightly lower level, was an inverted "cocoanut pot" of about half a gallon capacity.

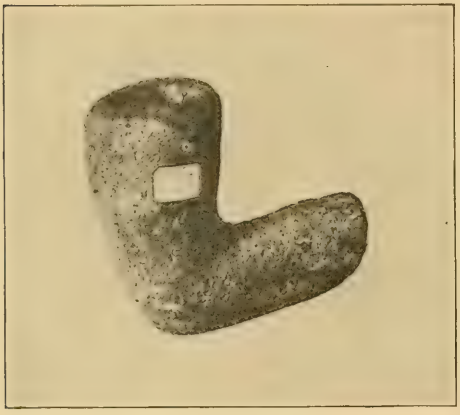


FIG. 13. Pipe from Easley mound no. 5.

Under the feet of this skeleton, at a depth of 2 feet, lay the upper portion of an adult's skull; it was not connected with a burial, but was lying loose in the earth. On the same level as this piece of skull, 6 feet northwest of it, was the large clay pipe seen in figure 13. Nothing else was found about either the skull or the pipe.

Directly under the head of grave A were the teeth of two adults, one set worn nearly to the roots, the other set worn scarcely at all; a foot east of these were parts of two other sets similarly denoting different ages; traces of bone were found extending toward the west. All these remains were in a grave only a few inches deep.

Distant 20 feet slightly south of west from the center, in a grave (C) extending less than a foot below the surface, was the skeleton of a child about two years of age. In a similar shallow grave (D), 18 feet east of the center, was an extended adult skeleton, lying on the back, with the head toward the south; the skull, which was lying on the left side, though slightly crushed by pressure, was in much better condition than any other found during the summer's work. Only a few stumps of teeth were in the upper jaw, which crumbled away, though the teeth remaining in the lower jaw were fairly well preserved. Eight feet south of this skull, a foot above the bottom, were fragments of several teeth and of jawbones, with no other bones around them.

On, slightly under, and within a foot above, the natural surface, at various points on the east, west, and south sides of the mound were found teeth (nearly all milk teeth), most of them worn either slightly or not at all, and without the roots, which had disappeared.

Six feet south of the center, a foot above the bottom, was a mass of bunched bones in utmost confusion. Teeth and femora found among these had belonged to at least three adults, a youth, and a child. The bones had been laid on wood or bark and covered with the same material. Some of the adult teeth were very large and all the teeth were remarkably well preserved, while most of the bones were as soft as wet earth.

Distant 3 feet north of the center, 6 feet above the bottom, were traces of an adult skeleton, with the head toward the west.

Beneath the mound, at the center, was a grave pit measuring 6½ feet by 8 feet, the longest line running nearly east and west. This pit was quite shallow, extending nowhere more than 9 inches into the subsoil. The sides were somewhat curved and the corners rounded, making it between an ellipse and a rectangle in form. The earth for 3 to 4 feet above the pit was very loose, proving that there had been a temporary protective structure of wood. The bottom had been covered with bark or wood, which extended up the sides and around the margin. On this were two adult skeletons, lying extended on the back, with the heads toward the west. The skulls, which had been thick and strong, were crushed into small pieces. Enough was left of the one to the south to show that it was very narrow, with low, sloping forehead, and eyes unusually close together. This skeleton lay so close against the margin of the grave that it was bent sidewise at the hips to conform to the curve. At the left side of the other skeleton, lying close to the north border of the grave, were a few fragments of bones of a child 3 or 4 years old. Near the center, between the two skeletons, were teeth of two young children, one an infant.

On the middle line of the grave, 2 feet from the east end, was a hole about 12 by 16 inches and 8 inches deep. A similar hole was 2 feet outside of the southeast corner. Nothing was found in either cavity except earth which had settled in.

At each corner, just outside the pit, was a pile of rocks, containing about a wheelbarrow load. There were no remains under these stones, which were probably in the nature of a monument.

Most of the interments in this tumulus were remains of children or at least of young persons.

MOUND NO. 6

This tumulus was a cairn 2 feet high and 25 feet in diameter, situated 650 feet northeast of mound no. 8.

As soon as the uppermost stones were removed, pieces of skulls and other bones appeared; these were found among the rocks to the bottom of the mound and 6 inches in the earth beneath. Most of the remains were in the southwest quarter of the cairn. Not a whole bone was discovered except one clavicle of a child, which lay in soft earth fully a foot from any other bone; nearly all the bones apparently were in small fragments when put here. Appearances indicated that a number of graves had been cleared out and their contents, bones and earth together, brought here and scattered promiscuously to a depth of 6 inches before any stones had been placed. From this stage to the completion of the structure stones had been thrown in along with the subsequent burials.

All ages were represented in the burials; there were fragments of infants' jaws with the teeth not through the bone; teeth worn to the roots; and jaws from which teeth were missing and sockets closed up. Bones from every part of the body lay in contact, those from old and young together, in many cases crushed between flat stones which were in so close contact that no earth had made its way in between them. One body, that of an infant, had evidently been buried soon after death; the few bones remaining were in proper position, and small disk-shaped shell beads lay near the head. A few flints were scattered here and there.

Probably this spot, which commands an extensive outlook toward every point of the horizon, is the site of a communal burial, containing the remains of all who had died during a period of several years. After having been buried elsewhere in the earth, or in some cases perhaps after having been kept on scaffolds or about the houses, all the remains were finally collected and interred here.

The Baumhoefer Mounds (11)

Two miles directly south of Easley, on the farm of Mr. Fred Baumhoefer, is a cultivated ridge running west to a precipice bordering the Missouri bottoms and sloping steeply to each side. On the crest were two mounds, having many stones on the surface.

MOUND NO. 1

The mound nearer the end of the ridge was opened first. This stands on a point commanding an extensive outlook, hills 20 miles away being in plain view.

There was so much in the construction of this mound that was difficult to understand, so many features whose interpretation was uncertain until the work was completed, that two statements will be submitted with respect thereto: First, a full transcript of the field notes; second, a description of the methods employed by the

a NORTHWEST CORNER, PART OF TOP AND OF NORTH WALL, LOOKING WEST

b CIST GRAVE, NORTH SIDE OF VAULT, LOOKING SOUTHEAST

c CIST GRAVES, NORTH SIDE OF VAULT, LOOKING SOUTHWEST

INTERIOR OF BAUMHOEFER MOUND NO. 1

builders from the inception to the close of their labors. The first is perhaps unnecessary but it will assist the reader to realize the perplexities which sometimes embarrass an investigator.

After carefully viewing the mound from every direction, the bottom was conjectured to be on a plane which would give the structure a diameter of about 50 feet, with a height of 8 feet. A trench deep enough to reach the yellow subsoil was started in at this level, on the north side. This sloped rapidly upward, and the discovery was soon made that the excavators were entirely outside of the mound, whose actual diameter proved to be not more than 25 feet, and its present summit only 4 feet above the base. Just within the real margin stones were reached extending in a fairly straight line east and west. At each end this row of stones turned, extending to an irregular heap along the south side. When fully disclosed all around, these stones seemed to be the bracers or outer portion of an interior vault. Measured across the center, the space covered by them was 22 feet north and south by 21 feet east and west, the sides being straight and the corners rounded. Measured between the points where the outer edges would have intersected, if carried on in straight lines, the length of each side was as follows: North, 21 feet; west, 21 feet; south, 19 feet; east, 22 feet. Seeming discrepancies in these figures are due to unequal projections of stones roughly laid up. On the west side, where the wall was highest, the distance from top to bottom was 2 feet 4 inches.

On the south and west sides the stones were in a compact mass, like a single rough, heavy wall; on the east and north sides was an inner wall of stones separated by a space from an outer wall which consisted of only a single row of rocks. This outer wall joined the "rough, heavy wall" at the northwest corner. On the north side, near the east corner, the distance between the inner and outer walls measured 7 feet; but within the space there were other stones which seemed to belong to a grave made against the inner division of the wall, and separated from the outer part by about 4 feet of earth. These features can be made out in plate 8, *a*. The camera had to be set very close.

When cleared off, this grave, for such it proved to be, was outlined on the north side and on both ends by slabs placed edge-up and inclined outward, the south side being formed, apparently, by the inner wall, as represented in plate 8, *b*. The inside measurements on the bottom were 6 feet 7 inches by 1 foot 11 inches. In the grave was a skeleton 5 feet 8 inches long, which lay extended on the back with the head toward the east, and the feet crossed—the last-mentioned feature being unusual. The remains rested on flat rocks laid on earth that was somewhat mixed, and about at the natural level; other slabs were placed over the body.

Removal of all loose rocks and earth showed that this grave did not rest directly against the inner wall, as first supposed, but against another grave similar in construction though much smaller, being only 10 by 29 inches on the bottom. This contained the bones of a child of seven or eight years. The two graves and a part of the wall, looking southwest, are shown in plate 8, *c*.

Continued excavation revealed a burial vault filled with earth and constructed in the manner described below. One skeleton, a foot under the surface, with the head toward the west, was probably intrusive.

The inclosing wall measured outside 14 feet east and west, and 10 feet north and south. The north side was indented, the effect being to give the structure a somewhat reniform outline; the 10-foot measurement was made to the actual limit, not to the point where a continuous line would bring it. Had the curve been uniform, the boundary would have formed a regular ellipse with a breadth of 12 feet, extending to the middle of the child's grave. The average height of the wall inside was 2 feet 2 inches, except at this indented portion, where it was not more than a foot; but the stones were so well laid, and so continuous at the bottom with those on each side as to show that there had not been a doorway or entrance here, but that the wall was built as a whole in its entire circuit. Afterward, the single row of stones was run to include both graves within the general system of burials of which the vault was the principal feature.

Under the main wall, where the incurve began, on the north side, was the skeleton of a young child, lying on the natural surface, with the head toward the east.

Beneath the smaller grave, outside, was another dug a foot into the subsoil. It was 7 feet 8 inches long east and west, 2 feet 4 inches wide, and contained the extended skeleton of an adult about 6 feet long, which lay on the back with the head toward the east; the teeth were much worn.

Within the vault was an excavation 8 feet east and west by 4 feet 7 inches north and south. This had contained five bodies, at a depth of a foot in the subsoil. At the west end was an adult skull; at the east end there were three adult skulls, and the teeth of an infant. Enough traces of other bones were found to indicate that all the adult skeletons were extended on the back, two of them on the earth, two on small flat stones. Three skulls were turned to the left, one to the right. At the vertex of the best preserved skull to the east, as if worn in the hair, were a conch or similar sea-shell about an inch long and fragments of a larger one too much decayed for any portion to be secured. The back and the left side of this skull were crushed and decayed; a portion of it was saved, however, as was also a jaw

from one of the other crania. All the teeth except those belonging to the child were much worn.

These skeletons were not resting on solid ground, but in an older grave partially re-excavated to receive them. Under them was a foot of filled earth, beneath which a layer of flat stones covered an extended body having the head turned toward the east, resting upon undisturbed earth, 2½ feet lower than the natural level. The skeleton was 5 feet 6 inches long; the teeth were worn down into the gums, in places below the enamel. The grave was 6 feet 4 inches by 2 feet 5 inches; thin slabs set upon edge and slightly inclined outward lined the sides and ends. Some of these were torn out before their true purpose was discovered, under the impression that they pertained to the burials above.

From so much of the mound as was cleared out fifteen wagon-loads of rock were hauled away.

METHOD OF CONSTRUCTION.

A description will now be given of the work carried on by the ancient grave diggers, based on the preceding data.

To begin with, a grave was dug on the culminating point of the ridge, near the river bluff. This was longest about east and west, or parallel with the axis of the spur; 6 feet 4 inches in length, 2 feet 5 inches in width, with a depth of 2½ feet below the natural level. Around it thin stone slabs were set on edge, inclined slightly outward at the top; these may have been placed either before or after the interment. On the bottom was laid a corpse, about 5 feet 6 inches long, extended, with the head toward the east. The teeth were worn down below the enamel in places, a condition indicating considerable age. Above the body, as a covering or protection, were placed other flat stones; the grave was then filled. Afterward the earth filling and surrounding it was dug away to a depth of a foot below the top of the subsoil, over a space 8 feet east and west by 4 feet 7 inches north and south. Along the north half of this later excavation were laid small flat stones on which rested two adult skeletons with the heads toward the east, apparently placed on the back. Parallel to these, on the earth to the south, was a third skeleton similarly placed. At the top of the head of one of these were two small sea shells. The skeleton of an infant lay to the right of the last body, its head being near the east end of the grave. The body of another adult had been placed near the south side of the grave, with its head toward the west.

Around the bodies were rocks, some of those nearest the grave turned up on edge, others laid flat, and all supported by rocks and earth piled against the outside. They formed an ellipse modified by a slight incurve on the north side, whose length from east to

west, outside, was 14 feet; the breadth to the edge of the indented portion was 10 feet; had the curve continued normally on the north the breadth would have been 12 feet. The average height of the wall, inside, was 2 feet 2 inches. On the north side, just east of the indentation, the wall passed over the body or bones of an infant, lying on the natural surface, with the head toward the east, probably placed here some time before the others were interred, as the stones scarcely would have been piled directly upon the unprotected remains.

Outside of and close to the north wall a grave was dug a foot into the subsoil. This was 7 feet 8 inches long east and west, 2 feet 4 inches wide. It contained the body of an adult about 6 feet long, lying on its back with the head toward the east; the teeth were much worn. This burial may have been prior to or contemporaneous with those in the vault. If the former, it was so recent that the site of the grave was remembered and the wall curved to avoid covering it; if the latter, there was probably some good reason for not including it within the vault. The burial could scarcely have been subsequent to the interments in the vault, for it is not reasonable to suppose the old-time undertakers would have made the wall irregular in order to provide a particular final resting place for one who was not then in need of it. Possibly the change in direction was made to avoid another grave just above the one described. The latter, placed directly in a line which the wall would have taken had its curve been regular, was made of stones set edgewise and inclined outward at the top. The bottom, which was only 2 feet 5 inches long east and west by 10 inches wide, was paved with small flat stones. On these was laid the body of a child 7 or 8 years old.

North of this small grave was a larger one, the contiguous sides bounded by the same stones, so far as the smaller one extended. The larger grave was 6 feet 7 inches east and west by 23 inches north and south. Its construction was similar to that of the grave with which it was in contact—a cist of stones set up on edge, outwardly inclined at the sides and ends, and a level bottom of thin slabs, on which was placed a corpse about 5 feet 8 inches long, extended on the back with the feet crossed and the head toward the east; the teeth were worn flat, some almost to the roots; the body was covered with thin stones.

When the vault was filled to within a foot of the top another body was placed in it with the head toward the west, and the filling in completed.[a] Then a supplementary wall was built, consisting of a single row of stones starting at the southeast corner of the vault, extending northward, then westward, and again joining the vault at the northwest corner. This wall was plainly of later construction

[a] This may have been, however, a later intrusive burial.

than the main vault, and was built for the purpose of inclosing the two cist graves which lay to the north of the latter. At the northeast corner the wall was 4 feet outside of the larger grave. In this space, as well as in the vault proper, no filling stones appeared. The entire area covered by the vault and by this single wall measured 22 feet north and south by 21 feet east and west. The greatest height of the walls at any point was 28 inches. Finally, earth was piled over the whole structure to form a mound about 25 feet across. At the time of exploration this diameter was increased, and the height of the summit reduced to about four feet, though evidently somewhat greater originally.

In the above description it is not intended to convey the idea that this work was carried on without interruption. Possibly years elapsed from the time of the first burial until the completion of the mound.

MOUND NO. 2

This was situated 240 feet south of east from the first. Its appearance (pl. 9, *a*) indicated an artificial structure 11 feet in height and 75 feet in diameter. A trench run in from the south side, beginning at a point 25 feet from the summit, at a level 9 feet lower, showed that the bottom ascended as in mound no. 1, though less sharply; material for building had been taken from the crest at each side, and the mound was erected on a slight natural knoll, so its actual elevation was but somewhat more than 6 feet.

At a distance of 20 feet south of the center, on the yellow subsoil, were traces of an extended skeleton; within the next 4 feet were three other skeletons, two on the subsoil, one a few inches above it. These all lay east and west; the heads of two were toward the east, but of the others not enough remained to show how they were placed.

Distant 9 feet south of the center, 4 feet below the present surface of the mound, were fragments of bones of an adult. A foot north of this, on same level, were the remains of another adult, and 2 feet still higher and directly above were small fragments of the skeletons of an adult and child. All of these rested on layers of flat stones with similar stones above them.

At various other places in the south half of the mound, at all levels from the bottom nearly to the top, were parts of human frames, most of them no doubt the remains of bodies or skeletons interred, though some seemed to have been thrown in promiscuously as if gathered up with the earth from shallow graves outside. In one place a set of upper and lower teeth were found in normal contact in the earth; careful search failed to reveal a trace of the skeleton to which they belonged; even the roots of the teeth had disappeared.

The earth of the mound was much mixed, humus, soil, and subsoil appearing within the compass of a cubic foot or less. There were also many stones, sometimes one alone, apparently dumped in; sometimes two or three rather regularly laid, probably grave markers; occasionally ten or twelve in a pavement as if a body had rested on or under them.

An unusual feature was observed in this tumulus, one that has been reported only three or four times in the whole history of mound exploration. After its completion it had been reopened to a depth of 4 feet below its present summit, and consequently to a greater depth from its former apex. This excavation was basin shaped, 15 feet in diameter; the bottom was lined with small flat stones, on which several bodies were placed and covered with earth upon which a level pavement of similar stones was laid. The mound was then restored to its original form and a stratum of earth, mostly subsoil, spread all over it. The earth above the bottom stones of this intrusive burial was not of the same character as that below them, being looser and darker. Thus, the curved lower layer of stones, the level upper layer, and the addition of earth on the top, prove the upper part to be a later cemetery of mound-building Indians; but there was no means of deciding whether it was the work of the same tribe that built the mound in the first place, or of subsequent dwellers in the locality.

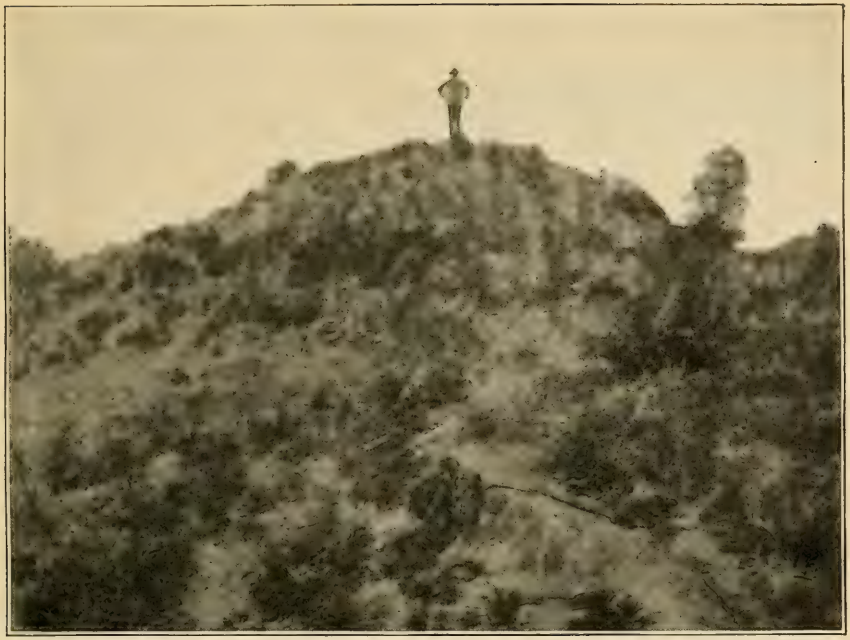
A section across the center of the structure, showing the secondary burial pit and also two graves in the undisturbed part of the mound, toward the west, is represented in plate 9, *b*.

Some bones in the secondary pit had stones placed over them; others were in clear earth. Beside one of the skulls, which lay between stones above and below, directly under the apex, was a piece of a large sea shell having the edges worked smooth, and a piece of ocher. The best preserved bone in the entire tumulus was a partially decayed lower jaw from this pit.

On the crest of the ridge, under the center of the mound, was a grave intermediate in form between an ellipse and a rectangle, the outline being not quite regular. This measured about 5 feet east and west, 3 feet north and south, and 2 feet deep; it was filled with loose sandy loam so dry as to be almost dusty—material in which bones should be well preserved; yet the only contents consisted of traces of bark, like ashes, and a few spots here and there of coarse brown dust which required a magnifying glass to prove it was all that remained of a skeleton.

Nothing more was found in the structure except a few rocks and fragmentary decayed bones.

A fourth of a mile east of these mounds, on the highest part of the hill, are two others, now about 3 and 4 feet high, respectively. Both



a BEFORE EXCAVATION

b SECTION SHOWING INTRUSIVE BURIAL BY THE MOUND BUILDERS

EXTERIOR AND INTERIOR OF BAUMHOEFER MOUND NO. 2

are elliptical in form, one about 50 by 20 feet, the other somewhat less. There is also a cairn on the point of the ridge. None of these were opened.

The Buescher Mounds (12)

On the farm of Mr. George Buescher, who lives a mile northwest of Easley, are seven mounds on the crest of a long narrow ridge which caps the river bluffs. Three were explored.

MOUND NO. 1

This mound, 45 feet across and 6 feet high, was composed entirely of loamy surface earth. Nothing was found in the body of the structure except occasionally a flint chip or broken point, or a potsherd. Ten feet north of the center appeared a small cavity which contained three or four pebbles, two potsherds, and a few scraps of charcoal; these had evidently settled in or had been dragged there.

At the center was a grave measuring 8½ feet east and west, 4 feet north and south, and 2 feet 7 inches deep. This was lined with split wood or bark, on which lay an extended skeleton, on the back, with the head toward the west and the face turned to the right. The body also had been covered with bark. The bones of one foot lay near the right knee; there was an interval of at least a foot between the adjacent ends of a humerus and its radius; part of the sternum, one clavicle, and two ribs lay beyond the outer side of the right arm. Other bones were in their proper positions, though the skull was crushed flat. From the top of the skull to the end of the tibia was 5 feet 9 inches. Two teeth could not be found; all the others were sound, solid, and but little worn. The last molars had not appeared, and there seemed to be no room for them. On the mouth lay a rectangular shell gorget 2½ by 3¼ inches, having a hole at one end and another at one edge, for suspension. The presence of incised lines, nearly obliterated, on the convex surface, suggested decorative markings of some kind. Under the skull and among the cervical vertebræ were three cylindrical shell beads perforated from end to end, and particles of at least one other.

About 3 feet north of the east end of this grave, lying on the yellow subsoil thrown out in digging it, were portions of teeth and leg bones of an elk—probably remains of a funeral feast; these were placed here after the grave was dug and before it was filled. Three feet farther north, in a hole a foot deep, were three roughly worked flint picks or digging tools, two of them having the points broken off. These tools were used, no doubt, in digging the grave; with them were a leg bone and broken jaw of a deer, and small scraps of mussel shell.

MOUND NO. 2

Mound no. 2 was a hundred yards west of no. 1. Its diameter was 55 and height 8 feet.

Distant 6 feet northeast of the center was the outer edge of a rectangular grave 8 feet 2 inches northwest and southeast, 2 feet 8 inches wide, and 16 inches deep. The bottom had been lined with wood, on which lay an extended skeleton, with the head toward the northwest. Most of this had disappeared; the feet bones were solid, while the other bones remaining had become progressively softer. The skull had entirely disappeared, only one tooth, worn to the gums, remaining. Against the instep of the right foot, which was turned outward, lay the top of the skull of a child about 4 years old; though it was soft and crushed, most of it was still present. Only here and there, however, could be found a fragment of the rest of the frame. Some large solid teeth, not much worn, lay at the center of the grave, but there was no trace of a skeleton to which these could have belonged. They probably represented all that was left of a skull deposited with the two bodies mentioned.

At the center was a grave, nearly rectangular, with rounded corners, though rather irregular in outline, the sides and ends not being straight either horizontally or vertically; its length, northwest and southeast, was 9 feet at the top, 8 feet 2 inches on the bottom, its width 3 feet at the top, 2 feet 8 inches on the bottom, and its depth 2 feet. In this grave, with its head to the west, was a skeleton 5 feet 8 inches long, lying extended on the back; the teeth indicated considerable age. The bones of the skull, arms, and legs still held their shape; other bones were more or less decayed, and none were solid except some phalanges. The larger bones were rough, as if from rheumatism, and a joint of one finger was completely anchylosed.

Six feet from the south edge of the central grave was the north edge of a third grave parallel with it; this was 9 feet long, 3 feet 8 inches wide, and 15 inches deep. In it lay two skeletons side by side, with the heads toward the west, extended on their backs, the faces being turned toward each other. Only fragments of bones remained, and these were crushed flat. The teeth of one skull were worn to the gums; those of the other were much less worn.

At the west end of the grave, beyond and between the skulls, and at a little higher level, were several pieces of a pot which had been intentionally "killed" by knocking out the bottom from the inside.

The three graves were made at intervals in the order here given. The earth from the first was thrown over the space later used for the second, and earth from this, in turn, over the site of the third.

Four feet higher than the last grave, over the eastern end of it, was the skeleton of a child.

MOUND NO. 3

Mound no. 3 was one-fourth of a mile northwest of the first two mounds, at the end of the spur overlooking the river; it was 45 feet in diameter and from 4 to 6 feet in height, according to the side from which the measurement was taken.

Near the surface on the western slope was part of a small pot thrown in with the earth.

Distant 10 feet south of the center, 4 feet from the bottom, under a pavement of small flat stones were scraps of bone of a half-grown person.

Beneath the apex was a grave 2 feet 10 inches deep, having the following dimensions at top and bottom, respectively: 8 feet 3 inches and 7 feet 2 inches long; 3 feet 2 inches and 2 feet 4 inches wide at the east end; 3 feet 9 inches and 2 feet 4 inches wide at the west end. Lying extended on the bottom, with traces of wood and bark above and below it, was a skeleton, with the head toward the west, whose bones, though more solid in a few parts than any other bones yet found, were much decayed in, or wholly absent from, other parts. Beside the left knee were nine thin, slender, arrow-heads from five-eighths to nine-eighths of an inch long; judging from their position they had evidently been in a quiver. Beside the left side of the skull and at the neck were five pieces of columellas from $2\frac{3}{4}$ to $3\frac{1}{8}$ inches long, drilled lengthwise; also six cylindrical shell beads, which fell to pieces. The teeth were very little worn; one wisdom tooth had not grown level with the next molar, and another could not be found, though the shallow socket showed it had existed.

THE KURTZ MOUND, IN HOWARD COUNTY (13)

Numerous mounds, some of them 15 feet in height, exist in the southwestern part of Boone county and in the adjacent part of Howard county. In most of those which have been opened by farmers and relic hunters, limestone or sandstone rocks from the surface and ravines near by are found in quantities. From the accounts given it would appear that cist graves or vaults have been found in some of the mounds, and many skeletons have been exhumed. The contents seem to have been but limited in quantity and commonplace in character.

On the farm of Mr. Strother Kurtz, a mile northwest of Lloyd's station, which is $3\frac{1}{2}$ miles west of Rocheport, are six mounds ranging in height from 2 to 12 feet.

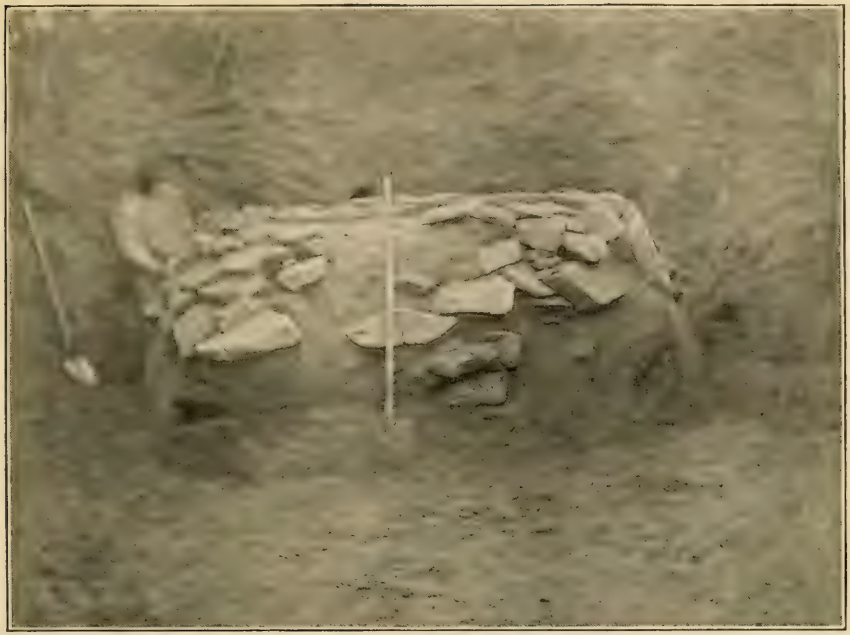
In one of these, 11 feet high and 60 feet in diameter, the central portion was cleared out over an area averaging 24 feet in diameter. Nothing was found in the body of the structure except earth and about four wagon-loads of stone promiscuously thrown in with it.

Around the center was a compact pile of stones covering a space 13 feet by 11 feet 9 inches, the longer axis running slightly north of east and south of west. (Pl. 10, *a*.) The stones, which extended nearly 5 feet above the natural level, inclosed a vault 7 feet 9 inches long. This vault was neatly rounded at both ends, the south face in as regular a line as could be followed with undressed stones; the north face curved outward; the width was 2 feet 4 inches where the curve began at the west end, 2 feet 5 inches at the east end, and 3 feet at the center. Its general form may be seen in plate 10, *b*, and in plate 11. Unfortunately, before the vault was fully exposed, meddlesome visitors tore away the stones at the west end, making it appear as if intentionally left open; as constructed, however, the two ends were alike.

Inside the wall, at a depth of 21 inches, was a rock pavement on which were traces of a skeleton of medium size; some of the teeth were much worn, while others showed scarcely a trace of wear. No relics of any character were above the slabs, but under the one on which the head had lain were three cylindrical shell beads an inch long. When the pavement was removed it was found that it had rested on filled-in earth, on which the vault was built. Test holes dug into this and carried under the wall disclosed no other stones, though there were many human bones, some of which extended under the inner margin of the vault wall, showing they were buried before the latter was built.

The wall of the grave and its outside bracer or supporting stones were next removed. Below the level of the pavement these were apparently intended for no other purpose than to limit and confine the earth of a mound about 3 feet high, erected as a foundation for the vault; consequently they were torn away without any especial attention being paid to their position. Too late it was found that they formed the outer portion of another vault whose exact inner dimensions could not then be ascertained; but it was considerably larger than the upper vault. It contained the remains of at least 25 individuals, ranging in years from infancy to old age. Nearly all were laid north and south; they were found at all levels from the original surface to the pavement of the upper vault, which, in fact, rested in close contact with some of them. Scattered among them were fragments of partially cremated bone. The bodies seem to have been interred at various times after death; in some cases bones were in their proper order; in others, bundled, bunched, or scattered. In two instances, two skulls lay in immediate contact. Two skulls, a jaw, and one pot were secured in fairly good condition.

It is much to be regretted that more careful work could not be done in the lower vault. But the nature of this structure was not ascertained until noon of the day on which work had to close; and the



a EXTERIOR, LOOKING NEARLY EAST

b INTERIOR, LOOKING SOUTHWEST

VAULT IN KURTZ MOUND

LOOKING NORTHEAST

LOOKING NEARLY EAST

VAULT IN KURTZ MOUND

choice lay between tearing it all out hastily, determining as accurately as possible the method of construction and securing what it might contain, or abandoning it, practically untouched, for someone in the neighborhood to demolish.

MOUNDS OPPOSITE KANSAS CITY (14)

Four miles directly north of Kansas City, lying along both sides of the line separating Clay and Platte counties, on the farms of Mr. Eugene Keller and Mr. J. P. Brenner, are 18 mounds located on a ridge approximately parallel with the Missouri bluffs and a fourth of a mile from the ends of the projecting spurs. These mounds are not evenly distributed, but are in subgroups of three, three, five, and seven, on knolls separated by slight depressions. All of them have been excavated to a greater or less extent by relic hunters, and more methodically by members of the Kansas City Academy of Science and others. Abridgments of published reports are presented below.

Partly as a result of these reports, the impression has gone abroad that the stone chambers described were intended as places of occupation, or at least as shelters, and the name "underground houses" has been applied to them. It seems that in some of the mounds no stones were found, thus casting doubt upon the residential theory.

In an article on "The Missouri Mound Builders,"[a] Judge E. P. West describes the result of his explorations in the group containing five, all of which he excavated. Three of these contained vaults; the two others were composed entirely of earth. A portion of his report is reproduced here, as follows:

> Number one, the most easterly, contains a stone chamber seven and one-half by eight feet, three feet high, with a doorway two and a half feet wide in the center of the south wall. Within the chamber, and on the plane of the base of the wall, five human crania and other human bones were found. Two of these crania were on the west side, two on the east side, and one near the center. One of them was entirely pierced, probably by a small arrowhead.
>
> Number two contained a vault eight and one-half by eight and one-half feet, three and a half feet high, with a doorway two and a half feet wide on the south side. This chamber contained large quantities of burnt human and animal bones, burnt clay, wood ashes, and charcoal, extending from the plane of the base of the wall to within eighteen inches of the upper surface. Many fragments of human crania were found. One was eighteen inches below the top, better preserved than the others, and probably an intrusive burial.
>
> Mound five contained a stone chamber eight and a half by eight and a half feet, four feet high, with a doorway two and a half feet wide at center of south wall. It contained a large quantity of burnt human and animal bones, burnt clay, wood ashes, and charred wood, all intermingled and extending entirely over the floor, at irregular depths. In the center of the chamber this mingled ash heap was not less than eight inches thick. Beneath it, on the natural surface, parts of four skeletons were found.

[a] In the *Western Review of Science and Industry*, I, 15, Kansas City, Mo., 1877-78.

These mounds were not covered with wood, because no traces of it are found; nor with stones, otherwise they would be in the vault. If covered at all, and it is highly probable they were, the covering must have been of the brick clay of which they are composed, and which is well adapted to the purpose, made into a stiff mortar and arched over the chamber like a bake oven, with an opening for the escape of smoke at the top; or else of the skins of animals, like a tent.

Many reasons seem to justify the conclusion that these chambers were dwelling places as well as places for interment. The doorway in all the chambers opening to the south, the great thickness of the ash heaps on the floor of the chambers, the intermingling of the bones with the ashes, and the size of the chambers—are all significant facts. The depth of the mingled ash heaps in mounds two and five precludes the idea that they could have been accumulated by the ordinary funeral rites, even though protracted for weeks. The doorway, the number of skeletons, the thickness of ashes, preclude the idea of a single interment, the undisturbed upper strata preclude the idea of successive interments at different periods. It is probable, from the situations in which the remains are found, covered with clay at no greater depth than the floor of the chamber, that successive interments, after the soft parts of the body had decayed, were made while the chamber was occupied as a dwelling, and so near the surface of the floor that the bones were sometimes reached by the domestic fire.

Another of the mounds above mentioned, which stood in Mr. Keller's garden about a hundred yards north of his house, was opened by a party of students, apparently in the summer following Judge West's explorations. They made the following statement of their discoveries to the Kansas City *Star:*

On the farm of Mr. Eugene Keller in Clay county, a mound was opened and five skulls were found, with other bones. As no evidence of fire was found, it is supposed that the bodies were not cremated, as were those in the mound opened by Judge West last October. One skull was found in an upright position, and almost under it were the leg bones. This seems to prove that the body was placed in the mound in a sitting posture. Another skeleton was found lying at full length along the side of the wall. Between twenty and thirty teeth were found, all in an excellent state of preservation. They were all very much worn, some being worn flat, almost to the roots.

* * *

The mound contained a square stone chamber, facing almost east and west, with an entrance on the eastern side. It is supposed that these mounds were covered with earth, supported by a network of branches, and held in place by stones. This theory is upheld by the fact that the bones are found so shattered, and that some of the skulls were crushed, also by the number of stones found in the mound.

In order to ascertain, if possible, the exact nature of the chambers, so that a comparison might be made with those farther down the river, described in preceding pages of this report, several of these mounds were carefully investigated. It was not to be expected that skeletons or associated objects would be found if the excavators had been thorough in their work; but it could be seen that portions of the walls remained in several places, and there was a bare chance that something might be discovered which would give a clue to the manner and purpose of the construction of these mounds.

All measurements given in relation to these different groups pertain to the mounds as they exist after being cultivated and otherwise altered in form.

The Keller Mounds

Of the eighteen mounds, eleven are on the Keller farm. These range from 20 to 40 feet in diameter and from 2 to 5 feet in height. Three of them were examined.

MOUND NO. 1

The first mound was 400 feet north of Mr. Keller's house, near that referred to in the above account from the *Star;* it measured 40 feet in diameter and 3 feet in height. A slight depression in the top indicated previous excavation.

Ditches were run in from the north and the east until rocks were reached; the rock deposit was followed around its entire outline, which was quite irregular, with an average breadth of 26 feet.

The central space, filled with mingled earth and stone, was next cleared out. Unfortunately, the earlier explorers, in the excess of their zeal, not only had dug entirely below the base level of the mound, but had torn down most of the wall; they had then thrown back promiscuously the material handled, leaving the interior in so chaotic a state that nothing could be learned of its original appearance. Only 7 feet of the wall was left intact along the north side; this was about 3½ feet high. Many of the stones composing this wall were larger than one man could lay up, and the face was practically vertical.

In the south wall was an entrance or doorway; only the east side remained. A minor or wing wall extended several feet from this, gradually lowering and narrowing. Evidently a walled passage-way the width of the entrance had formerly existed, through which it was necessary to pass in order to enter the vault. The south wall, east of the doorway, was intact to the southeast corner of the vault. The distance from the corner of the doorway to the north wall was about 11 feet; an exact measurement could not be made.

MOUND NO. 2

This mound was on a slope 30 yards east of no. 1; it measured 30 feet in diameter, a foot in height on the upper, and 3 feet in height on the lower, side.

When the sod and upper earth were cleared away, there was revealed a rough wall, having some stones inclined at various angles, others laid flat. The area covered was shaped like a pear with a portion of the stem end cut off; it measured 22½ feet from north to south and 15 feet from east to west. The extension, whose direction was down the slope, was the prolongation of two wing walls leading, one on each side, from a doorway in the south wall. Through this was reached a vault about 7½ feet square. The doorway was barely wide

enough to walk through, but as the bordering stones were all out of line, the passage was no doubt more nearly adequate when made.

The southwest and northeast corners of the vault were intact, as was the west corner of the doorway, where not disturbed by the plow. The outside and top of the wall on the west side are shown in plate 12,*a*.

Behind the stones forming the inner face was a backing of earth; the outer rocks were partly piled against this and partly laid on it.

As in the first mound, the interior of the vault was so torn up that its method of construction could not even be guessed at. The walls showed marks of intense heat; small fragments of partially cremated bones were found; and there was half a cartload of earth, some of the pieces as large as a gallon bucket, burned hard as a brick. This condition could result from the cremation of a body incased in or covered with clay; such finds have been reported. But numerous smaller pieces, from the size of a pea to that of a hen's egg, burned equally hard, and scattered here and there in deposited earth previously undisturbed and showing no marks of fire, must have been carried in from the outside in the process of building; and perhaps all of it was. However this may be, a great fire had been maintained for a considerable time within the vault.

Several pieces of siliceous iron ore were found, the interior hard, the outside soft and rubbing off easily. Some of the stones were quite red where the "paint" had settled on them. This may explain the red coloring matter on "painted bones" found elsewhere in this vicinity, the ocher, softened by the action of water and carried along by the same agent, having been deposited on the bones.

The walls of this vault, while not now vertical, seem to have been laid up so, and afterward pushed in or out by pressure of earth and growing trees. The greatest height of any part was 2½ feet.

MOUND NO. 3

Three hundred yards northwest of Mr. Keller's house were three small mounds close together. No stones appeared around one of these; in another the defaced walls of a vault were visible. The third seemed not to have been disturbed to any serious extent; when excavated by the writer it was 40 feet in diameter and 2 feet in height.

The central portion was first cleared out, when a vault was disclosed which measured 8 feet north and south by 6 feet 9 inches east and west, the walls following almost exactly cardinal lines. The stones were quite large, particularly on the north side where four of them made up the entire height of the wall (pl. 12,*b*). The greatest elevation at any point was 26 inches, the least 21 inches; but some stones may have been plowed off the top. On the south side was a doorway

a OUTSIDE AND TOP OF WEST WALL IN MOUND NO. 2

b NORTH WALL, AND CLOSED DOORWAY IN SOUTH WALL, IN MOUND NO. 3

c SOUTH WALL, DOORWAY, AND PASSAGE IN MOUND NO. 3

FEATURES OF KELLER MOUNDS NOS. 2 AND 3

2 feet 4 inches wide at bottom and 2 feet 7 inches at top; the sides were somewhat irregular, as if laid up hastily or carelessly, but the stones were much disturbed, so the vault may not have been in the same condition as when built.

At the bottom of the vault, in a shallow, irregular depression about 2 by 4 feet, having its greatest length from north to south, were small fragments of partially cremated bones of an adult and also of a child 5 or 6 years old, scattered about over the surface as if carelessly thrown in, though it is quite possible their condition was due to former excavating.

Beneath these bones was a grave reaching from the east to the west walls, 2 feet wide. In this, extending its full length, lay four thin slabs 2 feet below the bottom of the wall; a similar slab at the west end stood nearly upright, its surface in line with the inner face of the vault. These rocks were not on the bottom of the grave, but 4 inches above it, that amount of earth having been filled in before the stones were placed. No remains were found in the grave either above or below the pavement except here and there a fragment of burned bone too small to identify.

After the burials were made and the vault was filled, the doorway was closed by means of earth and stones thrown in promiscuously, as shown in the illustration.

Stones around the outside of the vault covered a space 18 feet north and south by 15 feet 4 inches east and west. The vault wall was apparently upheld entirely around its lower part by earth upon which the stones were placed; but as none were removed except from the doorway, this is only a surmise.

All the walls were well laid up. The inside of the doorway, the south wall, and the two southern corners are shown in plate 12,*c*. The west and north walls and the northwest corner were equally distinct. It will be observed from the last figure that the corners are abutting and not interlocking, and that only occasionally are stones so placed as to break joints; even when they do so the construction may not be the result of design. The south wall abutted on the adjoining walls at each end; the north wall against the east wall; the west wall against the north wall. It appears, therefore, that the walls were erected in this order: East, north, west, while the south wall may have been either the first or the last laid up.

The Brenner Mounds

Mr. Brenner's farm lies next to Mr. Keller's on the west, and includes the terminal portion of the ridge, which slopes toward the river on one side and toward Line creek on the other. Along the crest are seven mounds, all of which were explored by Prof. G. C. Broadhead "in the summer of 1878, in company with members of the

Kansas City Academy of Science and the Kansas State Academy of Science."

Of the three mounds farthest east, Professor Broadhead says in his report:[a]

* * * they seemed to be nicely rounded earth mounds, but digging into them each disclosed regularly built walls about three feet high, exactly at right angles to each other, and enclosing a space 7 feet 9 inches square. The walls were constructed of thin, even layers of limestone laid flat upon each other, and built up with a regular perpendicular face, in fact much more true to the line than many so-called masons would place them. The crypts appeared to have been built above ground. * * *

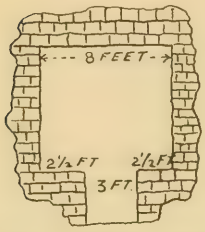


FIG. 14. Broadhead's plan of vault in Brenner mound no. 1.

In No. 3 several skulls and one good skeleton were found, together with fragments of others. With the exception of this one skeleton all seemed to have been buried in a sitting posture, or with knees bent, the hands close to or resting on the knees. * * * This vault had an entrance 3 feet wide opposite the eastern side, as represented in figure 9.[b]

The vault in Mound No. 2 contained a large quantity of charcoal, with fragments of charred bones, and much of the clay was reddened by burning. This was evidently a cremation vault.

The vault in Mound No. 1 is similar in shape and contents to that of No. 2 * * *. The vaults in each of the mounds 1, 2, and 3 had entrances or openings in the wall 3 feet wide, extending to the bottom of the wall. * * *

Mound No. 4, the largest, is about 5 feet high and 40 feet in diameter, and is built entirely of earth.

Mound No. 6 was similar to 1 and 2, and contained a concealed vault 7 feet 9 inches square, but without an entrance. Eight human skulls were obtained from this vault, but no complete skeleton, although some bones were exhumed in a fair state of preservation. In digging into this vault a few flags of limestone were found a few inches below the surface. Eighteen inches below was another fragmentary roof of limestone, beneath which skulls and portions of vertebræ were disclosed. The flagstones were not regularly arranged nor quite close to each other, but only a few appear to have been placed above the bones, and then earth was heaped upon them. Some fragments of flagstones were also found in No. 2, perhaps the remains of a former roof.

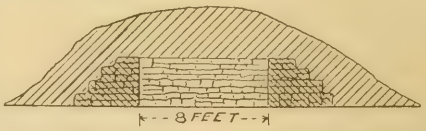


FIG. 15. Broadhead's section of Brenner mound no. 1.

Of the mounds described by Professor Broadhead, two were examined. As stated, his "No. 3" reappears here as—

MOUND NO. 1

This mound was 38 feet in diameter and 4 feet in height, but, like all the others, had been originally higher. The stones of the walls, projecting here and there above the grass, could be traced in most of their circuit. The space inclosed by them was nearly filled with

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[a] *Smithsonian Report* for 1879, 352–354, Washington, 1880.

[b] Reproduced here as figure 14. Professor Broadhead's view of a section of the mound is reproduced here as figure 15. Mound no. 3 of Broadhead corresponds to mound no. 1 of the present writer.

EAST WALL, DOORWAY, AND PASSAGE IN MOUND NO. 1

NORTH WALL, SHOWING ABUTTING STONES, IN MOUND NO. 2

FEATURES OF BRENNER MOUNDS NOS. 1 AND 2

earth containing many rocks torn from the walls. Removal of this débris disclosed a vault 8 feet 4 inches east and west by 8 feet north and south. The west and north walls had been partially demolished, the former having been pushed inward at the middle by a tree which had grown on it; the east wall was intact. The greatest height of the wall was 3 feet. The walls abutted at the corners.

The doorway on the eastern side measured 2 feet 7 inches wide at bottom. Access to it was between two wing walls, extending eastward for a distance of 6 feet 6 inches from the inner face of the vault, while bracer stones, roughly laid, extended 3 feet farther in the same direction. Neither wing wall was laid up smoothly or regularly.

On the south side, the width from the inner face of the vault to the outer margin of the brace rocks was 6 feet. The other sides were not cleared off; but these measurements indicate for the entire area covered by stones a space about 20 feet north and south by 24 feet east and west, the excess of the latter dimension over the former being due to the extension of the wing walls on each side of the entrance.

In plate 13 are shown the east wall and doorway, inside.

There is no mention in Professor Broadhead's report of the fifth mound opened by him. His "No. 6" must have been the last or most western of the group, as the sixth in order had a well-defined doorway; it is here described as—

MOUND NO. 2

This mound stood on a northward-sloping surface. It measured 45 feet in diameter and 5 feet in height. One inside corner of the vault was visible, the stones apparently not having been displaced. When the débris was thrown out it was evident that only the east and west walls, including a corner of the doorway, were injured. The other walls were in practically their original condition, only a few stones along the top being somewhat out of position. Across the center the vault measured 8 feet each way; the sides followed nearly cardinal lines, though not parallel, the east and west walls showing more divergence than the other two. Each wall in succession was measured at top and bottom, the results being: North wall, 8 feet 6 inches and 7 feet 11 inches, respectively; west wall, 8 feet 7 inches and 7 feet 4 inches; south wall, 7 feet 5 inches and 7 feet 7 inches; east wall, 8 feet and 7 feet 10 inches. These dimensions show there was considerable outward slope to the south and east walls while the other two were perpendicular.

The highest vertical measure of any face—the same on north and west sides—was 3 feet 8 inches.

The walls in this structure were laid up more accurately than in any other examined.

On the bottom of the vault were four flat stones, under which were femora and parts of skulls of two adults, and a femur of a person half-grown. All these had been dug out and thrown back at an earlier exploration. They were solid and fresh-looking, though only the shafts of the femora remained; all were much gnawed by mice.

The doorway in the south wall was 2 feet 3 inches wide at the bottom. This also was reached between wing walls, which were well laid up for 3 feet 10 inches from the inside of vault, and continued irregularly for 3 feet farther. The brace rocks of the main walls were larger than found elsewhere, and placed in a more orderly manner. The measurements between their outer margins were 19 feet 5 inches north and south by 15 feet 2 inches east and west. The north wall with abutting stones is shown in plate 13, and the south wall inside, with west wall of doorway, are shown in plate 14.

It is clear that these misnamed "underground houses" are of essentially the same character as the burial vaults in Boone and other counties to the eastward. The only point of difference is in the wing walls extending outward from the doorway, a feature that has not been noted elsewhere. There can be no doubt that all these "vaults" were intended for burial places, and for that purpose only. Though careful watch was kept, no indication was discovered in any of them of supports for a roof or other covering to shelter the interior from the weather. Neither was there trace of a fire-bed or of the natural accumulation of rubbish which would result from occupancy for living purposes. The diminutive size of the chambers is also against the theory of "houses;" though large enough to crawl into, yet if poles had been laid across even at a sharp angle and thatched with grass or weeds, there would have been no room to stand or move about; a skin wigwam would be more commodious and satisfactory. The condition and appearance of the earth in all of them prove it was carried in; it did not fall from, or with, a roof.

The Klamm Mound

North of Brenner's is Mr. Klamm's farm. On a narrow ridge on his land stood a mound about 25 by 30 feet and 4 feet high. Several years ago the north end was much dug by relic hunters, and in the fall of 1906 the remainder of it was torn out. All this work was done recklessly; shortly after the last spoliation, among the earth and stones thrown out were fragments of bones indicating the presence of the remains of at least four persons, one of large stature. There were three jaws, two those of persons not fully grown; in the other jaw the molars had disappeared so long before death that the cavity in the bone had entirely closed. Broken pottery, scattered around, showed by varying decoration that not fewer than four vessels were destroyed.

The last excavator could remember that he had found—

Nine whole pots, but broke seven of them in getting them out. One of the pots was much larger than the others and had angels stuck on all around; but these all dropped off. There was a lot of shells and shell beads, yellow paint, some flints, hoes, arrows, and things like that. There were three whole skulls, but these broke all to pieces in getting them out.

The "yellow paint" was red hematite, which had colored some of the bones and gave the impression they had been painted. This was due altogether to natural action of water soaking through. The "angels" were small, crudely made objects, apparently rude attempts to represent heads of birds, attached to the pots after they were partially hardened.

DISTRIBUTION OF VAULT-GRAVES

The researches so far made, described in these pages, show the stone vaults to extend from the great bend of the Missouri river at Kansas City, to the mouth of the Gasconade. Mounds containing "stones," or "stone graves," are reported beyond these limits in both directions; but whether these are vaults, cist-graves, or merely loosely piled stones, can not be ascertained with certainty from the reports.

There is said to be an aboriginal burial-place near Eureka Springs, Ark., where "walled pens of stone" contain skeletons covered with a slight thickness of earth, but with no mound over them. It is reported also that the Osage Indians formerly disposed of their dead, or of some of them, in this manner. Osage once lived along the Missouri, and moved up the river which bears their name.

One of the writer's workmen stated he had "seen Indians out in the Territory build a wall like these we are digging out, and put the dead inside."

These vague reports are merely recorded here; they are not given as facts, or indorsed as being worthy of consideration in the absence of more definite knowledge.

So far as we have accurate or reliable information, these vaults are known in only two other Missouri counties.

In the Smithsonian Report for 1879 (p. 351) Professor Broadhead describes—

* * * an ancient walled burial place situated on the summit of a ridge 250 feet in height, which rises on the north side of Salt river,[a] in the southeast quarter of section 11, township 55, range 3 west. The walls are constructed of rough limestone taken from the subjacent strata of the hill, and they enclosed two vaults, each 9 feet square, and from 2 to 3 feet in height. The vaults were not exactly in the same line but varied about 5°. Some of the stones had been removed and carried off. I saw only a few fragments of human bones, but was informed that other and very large bones had been found. The annexed sketch exhibits the form and relative position

[a] Salt river flows into the Mississippi about four miles north of the town of Louisiana.

of the two vaults, with their dimensions in feet marked thereon. They appear to have been originally built with a step on the outer face, as shown at B. The outer portion of the wall lies partly tumbled as if pulled down. Other similar burial places have existed in the county, but at present their sites only remain, the stones having been used for building purposes.

The sketch mentioned is reproduced here as figure 16.

Evidently Professor Broadhead regarded the two vaults as constituting a single burial place. The open space to the left, marked "rocks removed," is clearly a doorway. Reference to the various illustrations herein will show that in any of the vaults with brace rocks piled against the outside "the outer portion of the wall lies partly tumbled as if pulled down."

He says further (p. 352):

In Montgomery county, on the bluffs of Prairie Fork, near its mouth, in the southeast quarter of section 9, township 47, range 6 west, there are remains of a similar walled burial place to that on Salt river, Pike county. The walled space is ten feet

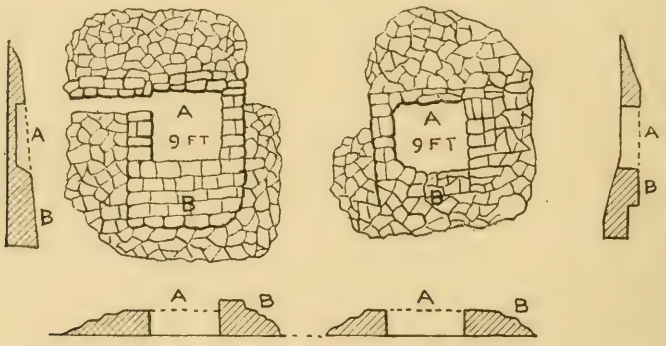


FIG. 16. Broadhead's plan of two vaults in Pike county.

square, and the walls were two feet high when I saw them in 1859. A few pieces of human bones were found.

And again, on the same page, in regard to certain mounds in Johnson county:

These I have not seen. They are located on the bluffs of Blackwater river, and are described as being very similar to those of Clay county, but of larger dimensions, with vaults built of stone, and having lids of the same kind of material, the whole covered over with earth so as to present the contour of large rounded mounds. Some pottery and flint implements have been obtained from them.

The reference to "lids" is obscure. Possibly it means that flat stones were used to cover the vault after it was filled.

MOUNDS IN VICINITY OF WARRENSBURG (15)

No doubt the last-named mounds are those referred to by C. W. Stevenson[a] under the head of "New Mound Discoveries," in substance as follows:

[a] In the *Kansas City Review of Sciences and Industry*, II, 106, 1878–9.

In the vicinity of Warrensburg [15][a] are mounds, every one excavated showing a stone box within, forming a true cist. They are essentially the same, their dimensions being nine by eleven feet, and six feet deep.

It is unfortunate that we have not a more detailed account of these mounds.

THE "INDIAN HOUSE" IN PIKE COUNTY (16)

Among the remains which have aroused great interest, but which have been instrumental in creating a false impression concerning the aborigines of the Mississippi valley, is a peculiar stonework in Pike county, near Louisiana.

The earliest known reference to this structure is found in a work by Beck.[b] The illustration which he gives has been widely copied, and its complete lack of resemblance to anything ever constructed by a "Red Indian," or by his mythical predecessor, the "Mound Builder," has furnished a basis for all sorts of fanciful theories. The smoothness and regularity of the walls, the accurate alignment of the stones, as portrayed in his cut (reproduced here as fig. 17), might well excite the envy of a skilled stone mason of our own day. The statement in his text that "all the walls consist of rough unhewn stone" proves the inaccuracy of the drawing, in which they are shown as smooth and even as they could be made with modern tools and machinery. Nevertheless, writers imbued with the idea of a "lost race" or a "high civilization" overlook this inconsistency and take only the drawing as a text.

Beck's description follows:

Noyer creek, a trifling steam, runs an easterly course through Pike county and empties into the Mississippi two miles below the mouth of Salt river. It is principally noted on account of the singular ancient works found on its banks about two miles southwest of the town of Louisiana. They are built of stone, with great regularity, and their site is high and commanding, from which I am led to infer that they were intended for places of defence. Works of a similar kind are found on the banks of Buffaloe creek and on the Osage river. They certainly form a class of antiquities entirely distinct from the walled towns, fortifications, barrows or mounds. The regularity of their form and structure favors the conclusion that they were the work of a more civilized race than those who erected the former—a race familiar with the rules of architecture, and perhaps with a perfect system of warfare. The annexed engraving [fig. 17] will illustrate the form of these works.

Fig. 1, faces the southeast.

ABCD outer wall, 18 inches in thickness; length 56 feet; breadth 22 feet.

(All the walls consist of rough unhewn stone, and appear to have been constructed with remarkable regularity. Although they are at present considerably decayed, their form is still distinct.)

E is a chamber, 3 feet in width, which was no doubt arched the whole way, as some part of the arch still remains. It is made in the manner represented in fig. 3, and is seldom more than five feet above the surface of the ground; but as it is filled with rubbish, it is impossible to say what was its original height.

[a] The corresponding number on the map (pl. 1) designates this group of mounds.

[b] A Gazetteer of the States of Illinois and Missouri, by Lewis C. Beck; Albany, 1823.

F is a chamber, 4 feet wide, and in some places the remains of a similar arch still exist.

G is a chamber, 12 feet in width, at the extremity of which are the remains of a furnace.

H is a large room, walled with two entrances, I and K. It is covered with a thick growth of trees.

The walls are at present from two to five feet in height.

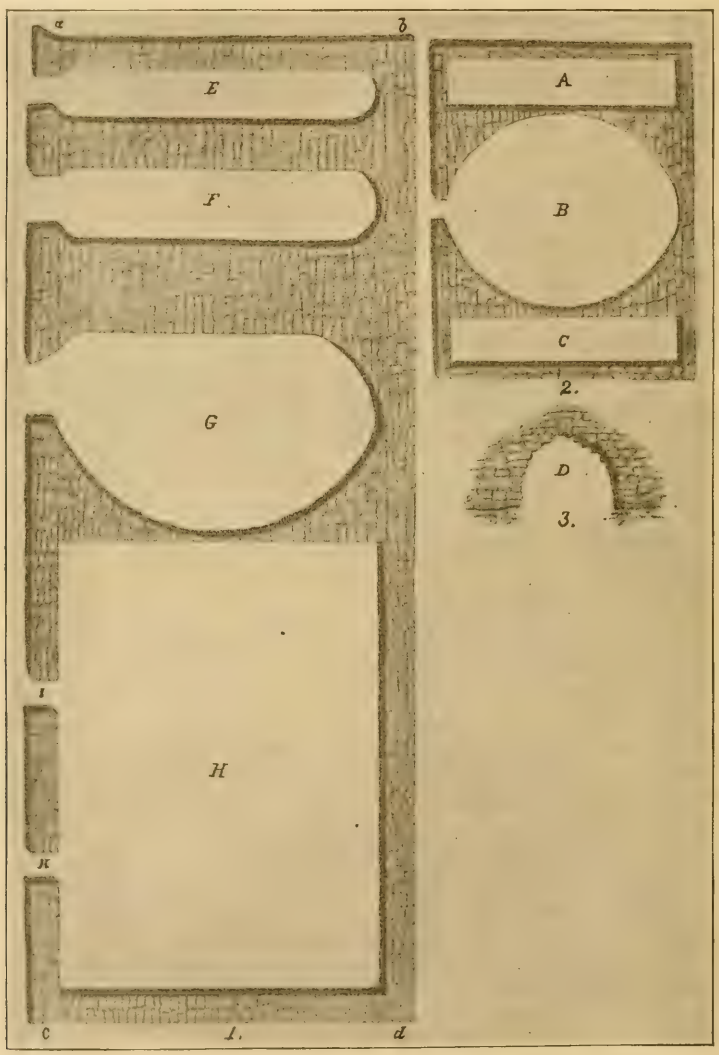


FIG. 17. Giddings's sketch of the Louisiana work (from Beck's Gazetteer).

One of the trees in the work is two feet in diameter.

Fig. 2 is a smaller work, about 80 rods due east from the former.

A and C are two chambers, without any apparent communication with B.

B is a room nearly circular, with one gate or entrance.

The walls are similar to the former.

For the account of these interesting antiquities, I am chiefly indebted to the Rev. S. Giddings, of St. Louis, who visited them a few years since and sketched a plan of which this is a copy. It should be remarked that in the passage G (fig. 1) several human bones have recently been found.

The above work is on a ridge about half a mile long and 400 feet high, 2 miles in a direct line southwest of Louisiana; this is known as the McMoore hill, from a former owner. "Nye" creek, as it is called by residents (the "Noix" creek of Broadhead; "Noyer" of Beck), flows along the west side and north end; on the east is a deep ravine, on the south a low gap. Thus the hill is almost isolated. The slope is so steep as to be quite difficult of ascent at every point except the south end. There is no level ground on the summit, the slopes terminating in a sharp curve along the median line. The "walls" are on the south end of the ridge, probably 30 feet lower than the highest point, and west of the crest; the north end of the structure is fully 3 feet higher than the south end, making the natural direct slope between them from the northeast to the southwest corner.

The whole place had been so thoroughly ransacked by relic hunters that no trace of a wall was visible at any point; but many stones, ranging in size from small angular fragments like gravel to slabs weighing 300 pounds, were scattered confusedly over a space 65 by 42 feet. There was enough stone to make a mound probably 50 by 25 feet, and 2 feet high.

A trench was run around the outer margin at ample distance to include all the part on which it seemed possible the walls could have stood; this trench was continuous except where trees interfered with digging. Bed rock, which outcropped on the slopes a few feet below and on each side, was found within a foot or less of the surface of the débris, except at the north end where earth washing down the natural slope of the ridge had covered it a few inches deeper.

From this trench excavations were made on every side toward the center, to ascertain whether any stones remained undisturbed; but none such were found except about the northeast corner. Here were two slabs, each as heavy as two men could handle. One was at the beginning of a row of flat stones extending 12 feet southward; the other at the beginning of a similar row reaching 15½ feet westward. These partial rows were all that remained as they were originally placed, and formed the bottom of the wall around this corner. For the most part there was only a single layer; but for a few feet on the north side there were two, three, and in one place four, stones superposed, as seen in plate 14, *b;* these were all thin and small. Abrupt "steps" or offsets along the bed rock in the interior indicated that the aborigines had pried off all they could of the projecting outcrop, for the double purpose, probably, of making level spaces on the bottom and procuring material for the wall.

When all débris was removed so the ground could be inspected, the distance from the northeast corner, outside, to a point where it seemed the northwest corner should be was 22½ feet; to a similar point at the southeast corner, 48½ feet. When the condition of the remains is considered, these figures do not differ greatly from those given by Beck. Measuring outwardly at right angles from the point at which the two walls met (at the ends of the pick and shovel, pl. 14, *b*), the width of the east wall was 6 feet; of the north wall, 4 feet.

In plate 14, *b* are shown the outside of the north wall and the top of the east wall, looking south from the outside.

It is apparent that the bottom layer, whatever its breadth, rested on the surface of the ground, and that the wall was not laid up either vertically or longitudinally in a manner more symmetrical or accurate than is possible with rough slabs having a wide variation in shapes and sizes. Moreover, it is said in the text that the walls were partially demolished before the sketch was made. In view of these facts, it would seem clear that Mr. Giddings saw only a portion of the structure and that his drawing as given by Beck is largely conjectural. Instead of separate stones being shown as they would actually appear in form and dimensions, Beck's figure is its own witness that spaces to represent each rock are marked off along nearly parallel lines. Furthermore, the walls are represented as standing upright instead of being flat on the ground; limestone slabs of irregular shapes, even if set up edgewise, could not have such symmetrical, brick-like outlines. Indeed, it is quite likely that the original sketch, made on the spot, was rather crude, its present finished appearance being such as would accord with the ideas of a draftsman who drew the stones after the conventional manner of text-books.

Col. Richard Hawkins, of Louisiana, says he first saw this work in 1867, and that the "wall" was then 2 feet high in some places. On the other hand, Mr. Homer Reed, whose father formerly owned the land, says he has a distinct recollection of it since 1868, and that it was not then essentially different from what it is now—a pile of rocks without any regularity, and certainly without resemblance to a wall at any point. He was present on more than one occasion when his father was excavating in the cairn which, first and last, he did pretty thoroughly, finding some eight or ten skeletons rather close together, but each in its own "grave." These were lying on the surface (a dug grave would be impossible in this rock), covered or protected by rocks set along the sides of each body and inclined inward at the top. Probably this position of the protecting rocks gave rise to the idea of an "arch." It will be observed that Beck says there were only remains of an arch. His sketch, "D, 3," however, shows a grave that is built up remarkably like a so-called "fur-

a SOUTH WALL, DOORWAY, AND PASSAGE IN BRENNER MOUND NO. 2

b LOOKING ALONG THE EAST SIDE OF THE LOUISIANA WORK

FEATURES OF BRENNER MOUND NO. 2 AND OF THE LOUISIANA WORK

nace" in Allamakee county, Iowa, made of rough sandstone slabs gradually drawn together until one stone reaches both sides at the top.[a]

The only relics found in this cairn, so far as Mr. Reed can remember, were some small shell beads (columellas).

The "wall no. 2" of Beck's drawing is fully half a mile in a direct line east of this work; it also is on a hilltop. As there are two stone mounds here, only a few yards apart, within plain view of each other, it is singular that only one should be mentioned. It may be that the second had not been opened at the time; it certainly could not be overlooked. The senior Mr. Reed examined these mounds also; judging from their present appearance, they were only cairns, perhaps with a cist grave inside. The interior has been cleared out and the stones have been thrown toward the margin all around. There is no sign of a wall, and Mr. Reed says there never was one; neither is there any indication that either rock pile was ever in the square form shown. At present, the outline of the base in each is an irregular circle, all the central stones having been removed, down to the natural surface. A well-made clay pipe was found in one of these.

Small cairns stand on many of the hills along the river and on "Nye" creek. From the descriptions of those opened they contain cists, or small bowl-shaped graves, in which are skeletons covered with flat rocks.

It is reported that near Busch station, north of Louisiana, on a ridge between Salt river and the Mississippi, there were at one time walled graves, the walls being partially sunk in the earth, but that all are now destroyed. The expression "sunk in the earth" probably means earth was piled over or against them but not to such extent as to make a noticeable mound. Probably these graves are the same as those described by Broadhead (see page 73).

Beck's Gazetteer (p. 234) contains other references to "Indian Houses." Under Gasconade county is found the following:

* * * a stone work exists, as I am informed by General Ashley, about 10 miles below the mills [referring to some "sawmills" whose location is not given]. It is on the west side of the Gasconade, and is about 25 or 30 feet square, and, although at present in a dilapidated condition, appears to have been originally built with an uncommon degree of regularity. It is situated on a high bald cliff, which commands a fine and extensive view of the country on all sides. From this stone work is a small footpath running in a devious course down the cliff to the entrance to a cave, in which was found a quantity of ashes.

Under Pike county (p. 243) is the statement—

In this county are several singular and interesting ancient works, which are similar in some respects to those on the Gasconade. They are situated on *Noyer creek*, and will be described under that article.

[a] For description see *Twelfth Annual Report of the Bureau of Ethnology*, 106, 1890–91, Washington, 1894. In the same report (p. 107), is a figure of a circular vault near the "furnace," similarly laid up.

But Beck makes no mention of any on "Noyer creek" other than the one near Louisiana.

Again, on page 263:

[On] *Buffaloe creek*, a small stream of Pike county, * * * there are also the ruins of a number of ancient forts, similar to those on the Noyer creek and Osage river.

On page 289:

Loutre river, a stream of Montgomery county, * * *. On the headwaters of this stream are said to be ancient works, similar to those on the Mississippi, for a description of which the reader is referred to *Noyer creek*.

It would seem from the text that Beck's knowledge of these remains was derived entirely from reports made to him. Possibly, too, he confused "houses" and "cairns."

One of these "houses" is on a bluff overlooking the Osage, a mile from the "Painted Rock," 16 miles nearly south of Jefferson City. A space approximately square and some 12 feet in diameter is surrounded by a heavy stone wall about 3 feet high. A similar smaller inclosure stands against one side of this "house," or perhaps all constitute one structure of irregular form. As no excavation was allowed, its nature is uncertain, but it seems to be a vault, not covered with earth as is customary.

If the reader will turn back to various illustrations herein, showing both the inside and the outside of vault-graves and will then consult anew Broadhead's drawings of the Pike county and Platte county mounds, in which are represented the outside regularly laid up in hypothetical steps (figs. 14, 15, 16), and will finally compare these with the sketch by Mr. Giddings (fig. 17), he will probably infer that the "Indian House" of Pike county, as well as all the others mentioned, are simply walled graves built in conjunction, and not covered over. The fact that chamber E was "filled with rubbish," that "in G * * * human bones have recently been found," and the discoveries made by Mr. Reed in his excavations, are all in consonance with the view that such is their purpose.

The explicit statements of Mr. Giddings and Colonel Hawkins that they saw the walls can not be set aside. Walls of some sort, though not as pictured, certainly existed. There is evidence in the illustration in plate 14, *b*, of a vertical outside face at the northeast corner. The bottom rocks here were never disturbed by relic hunters, consequently had brace rocks been piled against the outside they would still be in place; but there are none. Again, there is not now, and probably never was, enough earth on the upper part of McMoore's hill to build a mound completely over this structure.

Only one explanation offers itself.

The aborigines made burial chambers in a series, whether all at one time or during a long period does not appear. These were rock-

walled enclosures constructed on the same general plan as those described on preceding pages. But as both earth and stones were difficult to procure, a mound was not practicable, nor could the walls be braced in the usual manner. So another wall, facing outward, was built around the grave vaults, the two probably leaning slightly toward each other, thus affording mutual support. Slight evidence of such construction is offered in the condition of the east wall, where the large stone at the corner is entirely outside the line of stones extending toward the south.

PAINTED ROCK (17)

Among the numerous paintings on rocks and cliffs in the Missouri valley is one on the right bank of Osage river, 25 miles above its mouth and 16 miles south of Jefferson City.

The figures, evidently made with ocher or powdered hematite, are now faint. On a rock face high above flood are a so-called "buffalo," a design resembling a man with upraised arms, and several others too nearly obliterated to venture a guess as to their meaning. Lower, where the river occasionally covers them, are a zigzag line, probably intended for a serpent, and two or three "turkey tracks;" the latter may indicate diverging trails in the vicinity.

The paint has penetrated the soft limestone to a slight depth, a fact which accounts for the preservation of the figures. The surface of stone of this character gradually weathers off, the rate of erosion depending on the degree of exposure to atmospheric influences; so in time the figures will entirely disappear. It is quite unlikely they are of considerable antiquity; even in dry caves the roof and walls slowly disintegrate, and the process is naturally much more rapid with rocks in the open air.

The late Attorney-General H. Clay Ewing, of Jefferson City, gives the following tradition as to the origin of the figures:[a]

* * * Painted Rock is at the upper end of the bluff and gets its name from various rude drawings representing animals, such as buffalo and deer. These paintings are composed of some red substance, which can be plainly seen from the river. The figure most distinct seems to have been intended for a buffalo; it is about fifteen inches long and eight or nine inches high. * * * There is a rather interesting legend concerning this rock.

He then proceeds to describe the capture by Indians of Marie Roy, daughter of Joseph Roy, one of the principal men of the village of Cote Sans Dessein, and of the nine-year-old son of Widow Moreau, and of their rescue. Four men set out in pursuit of the Indians—Joseph Roy, Jean Moreau, and two unnamed companions. Roy and one man went up the Osage; Moreau and the other man up the creek

[a] In an article in the *American Field* of April 14, 1882.

which now bears the former's name. Moreau and his companion were probably waylaid, as it is said "they never returned, and his name was given to the river."

Roy and his companion hid their canoe, went across the country on foot, and thus got above the Indians and their captives, who were in canoes. Taken by surprise, the Indians ran away, and the whites started back.

* * * When they passed the rock where the figures I have described appeared, Marie told her father that they had stopped there for a few hours as they went up, and the head man or chief in charge of the party had "painted the rock," and from that day to this it is called the Painted Rock.

OLD FORT AND VILLAGE SITE IN SALINE COUNTY (18)

The area lying along the bluffs overlooking the Missouri river from two to six miles southwest of Miami, in Saline county, is a succession of knolls, ridges, and peaks, having steep slopes on every side except where cols connect them with one another or with the plateau farther back from the stream. The summits are of moderate elevation, nowhere more than 200 feet above the level of the overflow bottom land; most of them are less than 150 feet. In some cases rock outcrops near the bottom of the bluffs, but none is found at a greater elevation than 75 to 100 feet, all above this being loess. Near the river the natural wear of the land is reinforced by the action of numerous springs which flow out over the limestone, and work precipitous ravines into the bluffs, the combined surface and subterranean erosion producing the rugged features to which this region owes its rather fanciful name of "The Pinnacles."

Aboriginal burial mounds stand on various points along the bluffs, though not in so great numbers as farther up or down the Missouri; the largest, so far as can be remembered by residents, was not more than 6 feet high. Nearly all of the mounds have been dug into more or less; but it seems very little has been discovered in them.

Old Fort

On a ridge running nearly south from the general level of the tableland, on the farm of Mr. George P. Haynie, of Miami, is an earthen inclosure popularly known as the "Old Fort." Its exact location is on E. ½ SW. ¼ SE. ¼ sec. 24, T. 52 N, R. 22 W.

The north and south ends are on the summit of the ridge, while the east and west sides are carried along on the slopes at various distances below, curving and winding along the hillsides to conform as nearly as may be with the various inequalities produced by natural erosion.

A better understanding of the work may be had from the map (fig. 18) than from verbal description; the solid black lines represent embankments, the shaded lines ditches. The work is plainly defensive in nature. Except at the ends, approach is possible only by climbing the slopes; the latter, however, are not so steep as to present peculiar difficulty. The most accessible and vulnerable part is at the northern extremity; here the overlapping ends of the wall compel a detour in entering. At the opposite end, where there is a considerable level area outside the walls, protection is insured, or augmented, by a complicated arrangement of minor embankments and trenches. But the sides of these could not be made so steep, nor of sufficient height or depth, with the amount of earth available, as to balk a determined enemy.

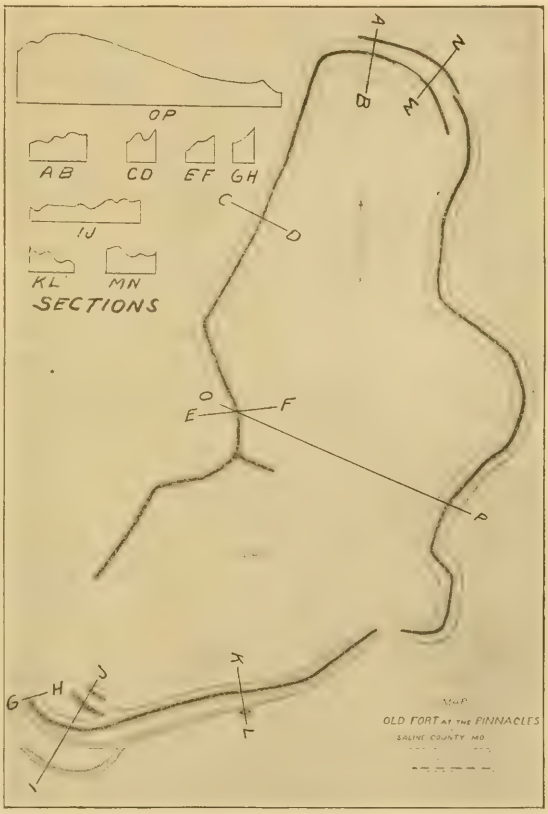


FIG. 18. The "Old Fort" in Saline county.

Residents in the vicinity who were familiar with the work before it was disturbed, state there was an interior ditch all around except at the entrances. Professor Broadhead, who also saw it in primitive forest, gives the following description:[a]

In Saline county, Missouri, four miles southwest of Miami, I visited, in 1872, an interesting locality showing ancient earthworks, walls, and ditches on high ground in a dense wood. The outline was somewhat of a circular shape, though quite irregular, caused by ravines breaking off near the outer rim, the walls being re-entrant in such places. The inclosed space is about 40 acres, around which there partly extended three ridges and two valleys, or rather depressions, where at one time existed deep ditches. We have first a ridge 8 feet wide and 3 feet high, then a ditch 6 feet wide and 3 feet deep, then a ridge 8 feet wide and 3 feet high, then a ditch 10 feet wide

[a] *Smithsonian Report* for 1879, 356, Washington, 1880.

and 3 feet deep, and lastly a ridge 10 feet wide and 1½ feet high. The ridges were apparently entirely formed of earth dug from the ditches, and two of them extended entirely around the space. No rocks appeared near by or in the enclosure. Black-oak trees 3 to 5 feet in diameter were growing over the walls, ditches, and inner area, and the whole surface was covered with a dense and luxuriant growth of bushes, vines, and trees. The ridges had certainly been at one time much higher, and the ditches much deeper.

The meaning of the last sentence is, probably, that they must have been "higher" and "deeper" in order to be effective. As will appear later, when Professor Broadhead saw them they were in a condition not very different from that in which the builders left them, being protected by the forest growth which he mentions.

The following are extracts from the report of Judge West in regard to Missouri archeology. Referring to this earthwork, he says:[a]

On this spur, about a quarter of a mile back from its terminus on the river valley, stands a wonderful work, known as the "Old Fort." It consists of intrenchments thrown up on the verge of the summit of the ridge on both sides. The intrenchments are still from two to three feet deep, and are on either side one thousand one hundred feet in length measuring through the center from end to end, and inclose an area of from two hundred to three hundred feet wide, the trenches following the curvature of the summit of the ridge. At the sides there is but a single trench, but at each end there is a double defense closing the trenches except leaving a pass-way about fifteen feet wide. Near the center of the work a single trench is thrown up connecting with the main trench on either side, with a pass-way in the center of the same width as those at the ends. There are four small mounds in the works, which were opened last summer by Mr. Middleton, of Kansas City. Two of the mounds stand at the north entrance and to the right of the pass-way as you approach from the north, and two of them are near the center cross intrenchments to the left of the pass-way as you approach from the same direction. Mr. Middleton found human bones, broken pottery, and flint chippings in the mounds. The bones were very much decayed. The pottery is precisely the same as that found in the fields in the vicinity. The trees growing in the intrenchments are of the same age as those in the adjacent forests. * * *

I dug into two of these mounds, in the field of Mr. Casebolt—they extend over four or five large farms—and for a depth of five feet I found successive layers of wood ashes and clay filled with broken pottery, flint chippings, bones, and shells. The bones were those of birds and animals. But Mr. Casebolt, on the same farm, had a cellar dug under a part of his house after it was built, and in digging, at a depth of about three feet, two human skeletons were found side by side, buried extended in a horizontal position at full length. The bones were said to be very much decayed, and crumbled upon exposure to the atmosphere.

These mounds are possibly among the group on the adjacent farm, to the northwest of the "Fort," though it is more probable they were two of the smaller elevations at the village site to be described later. If the latter, Judge West happened to strike one of the shallower pits and followed it to the bottom.

Some time after these visits the timber and brush on the hilltop and for a few yards outside the structure on the slopes were cleared

[a] In the *Kansas City Review of Science*, 530, Jan., 1882.

away and the ground was put under cultivation. As a result, the ditch is more or less filled in its entire circuit and wholly obliterated for some distance along the southeastern side. At several places outside the main wall there is still visible a partially filled ditch; and even where no trace of a depression appears the outer slope of the wall rises from a space artificially leveled in such manner that it resembles an old roadway; in fact, the resemblance is so striking that may persons suppose this to have been its purpose. It is thus proved that the wall was built with earth taken up on both sides, leaving a continuous ditch within and a ditch or level strip without, as shown in the various sections in figure 18.

The entire length of the principal wall, not including offsets or minor elevations, is about 2,700 feet; its extremely tortuous course may be inferred from the fact that in this distance it was necessary to set the compass at just forty stations in order to ascertain the changes of direction. The area included is slightly more than 6 acres.

The rank growth covering the entire work rendered it necessary to clear off with knife, scythe, and ax every foot examined. Consequently no work other than a survey was attempted, except to cut two trenches across the wall and extend them to the natural earth on both sides. These crosscuts, which were made not far from the north entrance, one on the east, the other on the west, where the wall was least altered from its original condition, showed the fill from wash and natural accumulation to be only a foot deep in the outer ditch or level area, and about 18 inches in the inner ditch; and some of this was due to plowing. The wall, where so cut across, has now an elevation of about 3 feet. It is not probable there was ever a vertical distance of more than 6 feet, if as much, between the bottom of the ditch and the top of the wall; the earth in the embankment, reenforced by that in both trenches, could not be made to stand at a greater height. Most careful watch was kept for traces of pickets or palisades; there was not the slightest evidence of them. From top to bottom, the earth in the wall was uniform in color and consistency, as it was in the bottom of the ditches. There was no cavity, no dark line, such as must have resulted from the decay of timber large enough to have been of service. If there was ever an additional method of protection, it involved the use of materials placed on the walls, and not extending beneath their surface. At both points where cut through, the earth was the tough, reddish-brown, clayey loess similar to that covering the hills around, and required constant use of a pick in its removal. Had there been even a small post set in this soil the marks would have remained indefinitely.

The cross "trench" mentioned by Judge West -who, by a slip of the pen, uses the word "trench" on several occasions when he means "embankments" –can be traced only so far as is shown on the map by the short projection from the eastern wall. There is an opening at the southwest end through which a farm road passes; it can not be ascertained whether this is the "pass-way" to which Judge West refers, or a modern road. There is another opening farther toward the east, as shown on the map, which may be the one he mentions; but it is not referred to specifically in either account from which these quotations are made.

At the south end two short minor walls appear within the main wall; there is also an exterior ditch beginning at the top of the steep slope, about 50 feet from the main outer ditch, and connecting with it at what is perhaps the "pass-way" of Judge West's description. One of the short interior walls joins the ditch inside the main wall.

These are all the features of the "Fort" which can now be traced; more might be discovered were it completely cleared off. The process of cultivation has destroyed much, and has defaced nearly all that is left.

It is reported that in the mounds at the north end, which have been repeatedly dug into, many skeletons were exhumed from a depth of 18 to 20 inches beneath the surface, "piled in on one another as if all thrown in at one time." At the south end skeletons were also found in the space between the ditches outside the wall and still others inside the "Fort" near the west side. A skull from the latter place "had a gold plug in one tooth."

The "Fort" much resembles some of those farther east, especially along the lower lakes, which are known to be of comparatively recent origin. There is nothing "remarkable" or "wonderful" about it, nothing to indicate any greater "ability" than the capacity to trace a fairly level line around a hilltop and pile earth along it.

It has been surmised this may be the fort erected by the Miami Indians; but theirs was a small affair, inclosing not more than "a fourth of an acre," and surrounded by logs, "in an elevated prairie bottom," in the upper end of Saline county, "four or five miles below the town of Miami."

On a ridge or knoll a fourth of a mile northwest of the "Fort" are several burial mounds. Nothing more definite could be learned in regard to them than is contained in the extracts from Judge West's paper.

Village Site at "The Pinnacles"

From half a mile to a mile eastward from the "Fort" erosion has cut numerous ravines in various directions in the plateau, leaving the higher portions somewhat in the form of a letter T, the top of

the T extending in a general easterly course and the stem southward for several hundred yards. Most of the land belongs to Mr. E. S. Casebolt; the southern part belongs to Mr. W. H. Utz.

Over all this area are abundant indications of an aboriginal village site. The ground is strewn for acres with potsherds, broken bones, and especially with the refuse resulting from the manufacture of flint implements. A great amount of good museum material, including nearly every class of objects usually found under such circumstances, has come from here.

The same conditions, but confined to a much smaller area, are reported to prevail on the eastern part of Mr. Utz's farm, on a segregated knoll. This was in a blue-grass meadow, where nothing on the ground could be seen at the time of the writer's visit.

With reference to this village site, Judge West says:[a]

* * * From a half to three-quarters of a mile from the earthworks [the "Old Fort"] and on a line parallel with the west side, there begins an area of country extending to near the terrace before mentioned [the Petite Osage plains], a distance of about two miles and which is about the same width the other way. This entire area is literally covered over with low mounds, containing wood ashes, stone implements, pottery, mussel-shells and animal and human bones. Indeed the whole ground seems to be filled in this way.

[Page 533.] This district may very aptly be termed a city in ruins. The ground for a depth of from three to five feet, or more, is filled with the bones and domestic implements of a departed race, and for miles around their broken implements lie scattered everywhere. They were undoubtedly a people who had a fixed and permanent abode, and an agricultural people, to a limited extent at least, for some of their stone implements must have been made for the cultivation of the soil. They must have used their pottery vessels for cooking their food, and the low mounds represent their kitchens, in which wagon loads of broken vessels might be gathered up—broken at the domestic hearth.

The "two miles in extent either way," which Judge West considers the area of former occupation, would carry the limits of the village site far beyond the points where any indications of it exist. The "low mounds," the only real evidence of an aboriginal town ("city in ruins" is hardly applicable), do not exist in this neighborhood outside of the limits of the two farms mentioned. Furthermore, it is not to be inferred that the débris on the main village site is equally distributed over the entire space; it occurs in separate deposits. In spots ranging from 20 to 50 yards apart the ground is literally covered and filled to a level below plow depth; but in going from one of these spots to another, the débris becomes less abundant, in places almost disappearing midway between the deposits which are farthest apart. The deposits are in one or two rows, according to the width of the ridge. Locally these are called "mounds," having been somewhat elevated at one time, though most of them are now leveled by cultivation. Some of the deposits, in pasture lands,

[a] In the *Kansas City Review of Science*, 531, Jan., 1882.

are still 16 to 18 inches high. A rough estimate by the owners of the land puts the entire number of deposits at "about forty," which is probably not far from correct.

In making excavations for cellars, post holes, and other purposes, skeletons have been exhumed at various points on this ridge; and on one slope where much soil has been washed off, numerous graves have been discovered in plowing. These graves seem to extend in rows, the bottom 1 foot to 3 feet below the present surface; there is no recollection that they have ever yielded any artificial objects.

It is evident that a dwelling place of some kind was located on each of these so-called mounds, which were erected to secure a well-drained residence site. The refuse around them is the natural result of aboriginal methods of disposing of waste and trash by throwing it just outside their dwellings; in fact the "mounds" were partially built up in this manner.

For various reasons only a very limited amount of excavation was possible at the time of the writer's investigations. A spot where it was said a mound had once stood was chosen, on top of the ridge on Mr. Casebolt's farm. The "mound" was indicated more by the quantity of flint chips than by its altitude; and while the débris was less abundant here than at some other points, the discovery of a portion of a human femur, evidently plowed out, determined the place of excavation.

Three narrow parallel trenches were started toward the "mound" center from the east margin of the scattered material. These, being only exploratory, were about 2 feet wide and extended to the subsoil, which lay at a depth of 18 inches. In all the trenches, mingled with the earth, was refuse of the same character as that on the surface, but much more pottery and bones, these being better preserved where protected. The pottery was of two varieties. Most of it was thick, strong, quite dark or even black, as if made from "gumbo" earth, decorated with dots and smooth indented straight and curved lines at various angles; but a few pieces were yellowish, smoothly finished, undecorated, apparently made of sand and clay. The heavier vessels had handles.

Buffalo bones, almost entirely scapulæ, were abundant; there were also many bones and teeth of deer, wolf or dog, bear, several smaller animals, numerous kinds of birds, especially wild turkey, and of fish, some of the last named of large size. A singular feature was the complete absence of flint implements; not a knife, spear, or large scraper was found, and only one very small arrowhead. Even fragments of such specimens were rare, but the small thumb scrapers made by chipping the end of a thick flake were found occasionally, perhaps a dozen in all.

Near the center of the space where surface signs were most abundant, about 18 inches deep, were pieces of a large pot, bones of a young deer in small fragments, and a pile of ashes. It looked as if a pot while in use had broken on or over a fire bed, and the whole mass had been raked up and thrown out together.

Among other things found was a small thin piece of catlinite, highly polished, apparently a fragment of a disk pipe.

Distant 15 feet from the center, the most northerly of the three trenches entered a pit 4 feet in diameter and 2½ feet deep. This was evidently a refuse or trash receptacle, as it was filled with ashes and earth, among which were fragments of bone and pottery, flint chips, and unfinished or broken implements of flint and other stone. In this débris was one human femur.

In the second, or middle, trench was a pit of the same character as that in the first, but much larger, and the deepest, probably, ever discovered. It was about 6 feet by 4½ feet in diameter at the top, and, as first dug, 4 feet in diameter at the bottom, with a depth of 7½ feet. Toward the bottom, on the south side, were narrow steps like a steep stairway, in the solid earth, to enable the diggers to carry out the dirt. Afterward, a hole 3 feet in diameter was sunk 3 feet deeper on the east side, making the entire depth 10½ feet. The pit was filled with earth and ashes, among which were as many fragments of bones, pottery, stones, and flint chips, as would fill a half-peck measure. Extending from the west edge of the pit, a few inches under the sod on a pile of ashes, were the solid leg and feet bones of an adult. As no other bones were present, it would seem the burial antedated the pit, and the missing parts were thrown aside in the digging.

In the line of the southern, or third, trench were two pits. The one first reached was 5 feet deep. From the north and west sides this was cleared out over an area 7 by 10 feet toward the east and south without reaching the margins in these directions. Near the top were the leg and feet bones of an adult, placed one above the other as if a body had been laid in on the right side, with the head toward the northwest. Below these were the corresponding bones of another adult, laid parallel as if belonging to a body placed on the back. In neither instance were there any traces of other bones belonging with them.

The second pit in the third trench was several feet west of the first; this was 6 feet in diameter and 4 feet in depth. The only human bone in it was the skull of a child of 5 or 6 years. Both jaws were missing and the skull lay with the vertex downward.

Between these two pits were the pelvis, leg bones, and feet of a person about the size of a normal 16-year-old boy.

At a distance of 3 feet northwest of the child's skull, on the same level (about 18 inches in depth), but not within the pit, was a fine pot, nearly perfect, standing upright in a bed of ashes (fig. 19). West of this was a scraper or polishing tool 15 inches long, made from the split rib of a buffalo or an elk.

Another trench was run from the center toward the south. Eight feet out, in a slight depression dug into the subsoil, was the cranium of a child, as smooth as if polished or at least much handled. It lay on the face, unaccompanied by any other bone.

Three feet farther from the center was the edge of a pit 5 feet in depth and 6 feet in diameter. At one point on the bottom was a pile of minute flint chips scaled off in making implements of small size or delicate finish; there were enough of these to fill a pint cup. A slightly smaller quantity of similar chips lay higher up.

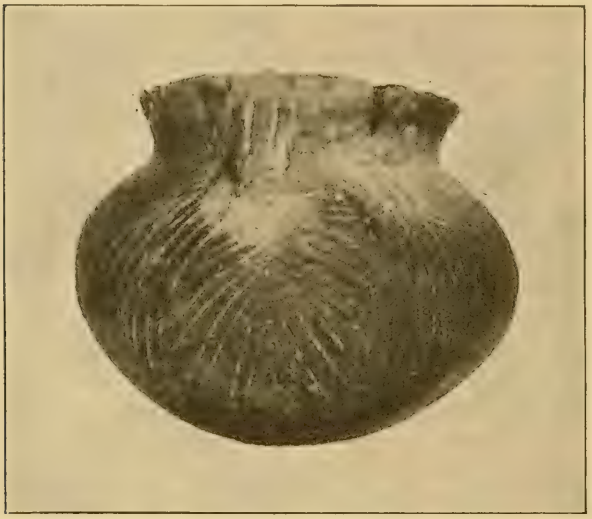


FIG. 19. Pot from village site, Saline county.

A satisfactory explanation of these pits remains to be found. Such excavations occur around and in many Indian village sites, modern as well as prehistoric. They seem to fall into two classes: Storehouses in which to preserve grain and other food, and refuse pits to receive the trash accumulating under ordinary living and working conditions. Very likely pits of the former class, when their usefulness as storage chambers was over, were utilized for the latter purpose. Neither object seems to have been altogether in view at "The Pinnacles." All the pits here contain much more earth than ashes, and while some of this may have fallen in from the top or sides, not a great quantity could have come from this source, or the pits would be somewhat conical. As it is, the sides are vertical or nearly so. Besides, they contain comparatively little of ordinary wastage. Some broken implements of stone or bone, potsherds, flint chips, and a small amount of charcoal were found in them, enough to show they were not designed for any especial purpose other than to receive ashes; and even so, the amount of earth evidently thrown back into them indicates some use not yet made plain.

The area excavated measures less than 30 feet in diameter in any direction and not half the earth in this limited space was examined. Neither was this the most promising site; in other places on the ridge many more specimens have been gathered up than in this field and more graves uncovered, and the surface is more thickly strewn with potsherds, bones, and flints.

The pottery was abundant, of good quality, and entirely different in form and decoration from any other ware found in explorations along the river. Nearly all the impressions are such as would be made with small rounded or pointed bones.

No agricultural implements of bone, shell, or stone were found, except one fragment which seems to be the end of a small flint hoe, but shows no polish. There was one piece of coarse sandstone, used for sharpening bone implements.

The only vegetable food discovered was a handful of charred acorns in one of the pits.

All indications point to continuous occupancy by a tribe whose subsistence was derived from hunting and fishing. The numerous scapulæ of buffalo bear no marks to show that they were used for digging; some scrapers, skinners, and polishers were made from pieces of these bones, and other implements made of bones of smaller mammals and of birds were found. The entire absence of cutting or piercing implements of flint from an area where bushels of flakes and chips can be gathered from the surface in a day, and where the ground is filled with them to the subsoil, is a most perplexing feature. Boys and collectors have gathered all finished and imperfect implements to a depth where the plow can turn them up; but flakes continue in quantity to a greater depth than the plow has ever reached, and it would seem that many rejects, at least, should be in the pits.

There is no evidence as yet, except Judge West's statement regarding the similarity of pottery, to connect the builders of the "Fort" with the dwellers on the village site. The former was seemingly occupied for only a short time or at irregular intervals, for although much desultory digging has been carried on at different places within the "Fort," no one in the neighborhood could recall the discovery of pottery, flint chips, or any other remains existing so profusely around the little "mounds."

The very limited amount of investigation so far made here does not justify any theory, argument, or conclusion, but the site is well worthy of most thorough research. The following item may have some bearing on the question of the time at which it was occupied.

In an article by John P. Jones, of Keytesville, Mo., on "Incidents of Early Travel in Missouri," this statement appears:[a]

La Harpe's Journal has the following account of a voyage to the Missouris and Osages: "Dec. 29th, 1719, M. de Bienville received a letter from M. Dutisme, of the Kaskaskias,

[a] In the *Kansas City Review of Science*, p. 20, May, 1881.

dated Nov. 22nd, 1719, containing a narrative of his voyage to the village of the Missouris by the river of that name. One league from this village, in the southwest, is a village of the Osages * * * ."

Jones adds in a footnote:

This town was located near the present town of Miami, Saline Co., Mo. A description [a] of an ancient earthwork near the site of this village appeared in the Review for April, 1878.

But if the Osage occupied this spot, manufactured the pottery found here, and utilized bones, especially those of the buffalo, to so great an extent in making implements, then the grave-vaults certainly are not to be attributed to them; for the art objects found in these are so widely different in shape, finish, and material as to offer almost positive proof that they must represent the industry of a people belonging on another plane of culture and governed by very different motives and ideas.

Probably Dutisme referred to the Osage village near Grand Pass or to some other whose location is not recorded. His "one league" may have denoted a distance quite indefinite.

ARROW ROCK (19)

In Saline county, Missouri, on the Missouri river, between Boonville and Glasgow, is the town of Arrow Rock, which takes its name from the cliff against whose foot the river flows. An impression exists among archeologists that the name was given because here was the site of an aboriginal flint quarry or workshop. In a footnote to his edition of the Lewis and Clark Expedition (vol. 1, p. 18) Coues makes the statement, without citing authority or giving his reasons for it, that "the rock was so called from being resorted to by Indians for stone arrow-heads." The impression as to the origin of the name, however, much antedates the appearance of this publication. In Thwaites's edition of Lewis and Clark (vol. 1, p. 44) the exact wording as it appears in their manuscript is thus: " * * * Several Small Channels running out of the River below a Bluff [Cliff of rocks called the arrow rock] * * * ", the bracketed remark being intercalated, whether by the original authors or by some one else does not appear. If there had been any foundation for the prevalent belief, these early explorers would surely have referred to it, for they record that—

a Short distance above the mouth of this Creek [*i. e.*, Big Moniteau, on the south side, between Boonville and Jefferson City], is Several Courious paintings and carving on the projecting rock of Limestone inlade with white red & blue flint, of a verry good quallity, the Indians have taken of this flint great quantities.

There is no trace of aboriginal quarrying in the vicinity of Arrow Rock, nor any place where it would have been practicable. The

[a] See excerpt from Broadhead, p. 83.

lower Carboniferous formation of Missouri contains a vast quantity of chert, and where this has weathered out of the parent rock without being disintegrated in the process the aborigines naturally gathered such of it as they could use. The limestone of Arrow Rock being comparatively soft and easily weathered, workable nodules are not rare along the shore, some of them containing solid cores capable of being formed into implements several inches in length. Evidence that some work was done here may be found in a little terrace near the upper end of the bluff, where a few square rods of surface are strewn with chips. But greater quantities of chips extending over larger areas, are common in places considerable distances from any available flint in place.

No one now living at Arrow Rock ever heard of the origin of the name as stated by Coues and by others before him, though who these are can not now be recalled. Only one tradition exists to account for it. A number of young warriors assembled on a sand bar opposite the cliff to test their power with the bow by ascertaining who could send an arrow farthest out into the stream, the victor to wed the chief's daughter. One of them shot clear across the river, his arrow lodging in a crevice high above the water; and so the cliff was thenceforward known as "The arrow rock." No citizen of the place has ever heard of any other explanation of the term.

A RECONNOISSANCE IN SOUTHEASTERN MISSOURI

In 1879 and 1880 the people in the neighborhood of Charleston [Missouri] discovered that the pottery in which the mounds of this region seem to have been unusually rich had a considerable commercial value. A regular mining fever at once broke out and spread so rapidly that in some instances as many as twenty-five or thirty men, women, and children could be seen digging for pottery in one field at the same time.[a]

This paragraph gives voice to a widespread impression which exists, that in southeastern Missouri and northeastern Arkansas all, or nearly all, mounds contain pottery, often in so great quantities that he must be indeed an enthusiastic collector who would not presently terminate his explorations through sheer satiety.

Acting on this supposition, researches were undertaken by the writer, in southeastern Missouri, in the hope and with the expectation of securing a large or at least a typical collection. Only a short time was required to expose the error of this belief.

Nearly every point recommended as worth investigating in Stoddard, Scott, Mississippi, and New Madrid counties was visited. Collectors, farmers, and other persons who were presumed to have knowledge of or interest in such matters were interviewed, and their advice and assistance sought. Almost without exception they were

[a] From *Twelfth Annual Report of the Bureau of Ethnology*, 183, 1890-91, Washington, 1894. Collectors had been busy in the region for several years prior to the date given.

courteous and obliging. The information was practically the same in every instance, and may be condensed into a few paragraphs.

The principal finds were almost invariably made on the sites of villages, generally in the immediate vicinity of mounds, though often several hundred yards from the nearest one. Usually one, sometimes two, rarely three, pots are found with a skeleton. Occasionally there is a burial mound in which many bodies have been interred. In one which was nearly effaced by cultivation the first intimation that it might yield anything was the uncovering of pottery fragments in plowing. This was explored by Mr. Thomas Beckwith, of Charleston, who found the base to be 4 feet lower than the surrounding level. Whether this had been a burial pit filled and covered, or whether the field had been built up to that extent by deposits after the mound was made, he was unable to say; but skeletons and pottery were found everywhere from top to bottom, the lowest of them in standing or soil water. Exactly 300 pots were saved, including practically every size, shape, style, and degree of finish found in the region. There were also two human effigies carved in sandstone.

Though fine specimens are occasionally found in them, the larger mounds as a rule contain very little; and it would seem from the descriptions of the position and manner in which skeletons or relics are placed, that they were mostly deposited in the course of uprearing a structure which was primarily intended for some purpose other than that of sepulture.

There are real mortuary mounds from which pottery is procured in greater or less amounts, but compared with the total number these are few. Probably 90 per cent, or even more, of mounds in the territory comprising and adjacent to the "Sunk Lands" were erected with some end in view which did not include either funeral rites or the concealment of relics.

The prospectors of twenty to thirty years ago proceeded systematically; they used long steel probing rods with which they tested almost every foot of a field they wished to explore. There are no stones, scarcely a pebble, in this alluvial soil; consequently when the rod met with an obstacle the searcher could be almost certain it was an implement, a piece of pottery, or other artificial object. In this way they soon learned in what sort of situation or amid what sort of surroundings a village site and its associated cemetery were likely to be found; and when one was discovered they usually exhausted its possibilities before going elsewhere. Further, a series of fruitless excavations taught them that mounds made of earth so hard the probe would not readily penetrate it would almost certainly be destitute of contents, or, if otherwise, that articles of pottery would be broken by pressure. So, in time, the prospectors became quite

expert in selecting localities where digging would "pay," and found aboriginal vessels literally by the carload; and they inspected the country so carefully that only by chance is a source of fresh supply discovered. Yet from time to time enough is disclosed to assure an explorer good results, provided always he can find the right place and secure permission to examine it. Two promising localities are now known which have never been worked, but the owners will not allow researches to be made. Undoubtedly many others await discovery.

Occasionally a vessel of some description is found by a laborer and carried to a store where it is exchanged for goods; but specimens accumulate very slowly in this way. Mr. Beckwith, whose collection is famous, has been twenty-five years or longer in getting it together, during all which time it has been a matter of common knowledge that he is in the market for whatever is worth having; and most of his collection has come from his own tenants. He remarked "If I knew where pottery could be found, I would go there and dig for it."

More than thirty years ago, while the territory was practically undisturbed, Professor Conant carried on a very profitable exploration for the St. Louis Academy of Science. His principal work was along the west bank of St. John's bayou, between Sikeston and New Madrid. The success of his efforts led to the selection of this vicinity as the site of the only mound excavating attempted.

The work resulted solely in a verification of the information set forth above.

The Hunter Mounds

On the farm owned by Mr. A. B. Hunter, 7 miles north of New Madrid and half a mile south of Farrenburg on the Cotton Belt railway, is a group of mounds extending for half a mile or more along the west bank of St. John's bayou, the extreme width of the group being about 200 yards. Much of the area on which these mounds stand was under cultivation when examined, so the exact number is uncertain; but there are not fewer than sixty. All of them have been more or less farmed over and thereby somewhat reduced in height; at present they range from 1 foot to 6 feet in height, and from 30 to 75 feet in diameter. Five of the mounds are along the edge of the terrace overlooking the bayou; the others are behind these, on the nearly level ground.

Near the south end of the group, at the edge of the terrace, is an amphitheater-like depression of about an acre, facing the bayou; it is said so much broken pottery occurs here that "in plowing, the plow sounds as if it is running through gravel." It is generally supposed, perhaps correctly, that this is the site of a pottery factory; but no exploration could be made at the time.

Seven of the mounds were opened, from the largest to the smallest. Two of these were on the edge of the bayou; the others were selected at random among those farther back. In each, the central portion of the structure was removed to a depth which made it certain that undisturbed earth or subsoil was reached, and the excavation was carried to a sufficient distance on all sides to show there was nothing beyond worthy of investigation.

On the bottom, at the center, of the largest mound, next to the bayou, were decayed fragmentary human bones; but neither in this mound nor in any of the others explored was any artificial object discovered except a few pieces of flint or pottery, which clearly had been gathered up in the course of the building and thrown in with the earth. In one mound was a fragment of a clay disk; in another, a broken specimen of one of the objects commonly called bottle stoppers for the reason that cases are reported in which vessels with slender necks (the gourd-like form) have been found with these objects in the mouth or opening. While many of the "stoppers" were no doubt thus used, it is probable that others, perhaps most of them, were employed in the manufacture of pottery. The convex surface of the expanded portion, if carefully polished, as most of these objects are, would be well adapted for shaping and smoothing the interior of vessels built up by the coiling process, or by gradual accretion from the base, the projecting part affording a convenient handle.

It seems the "stoppers" also filled a more important office in this sort of work, as described by Mr. Christopher Wren in the following paragraph:[a]

> At the Louisiana Purchase Exposition * * * the writer saw a Cocopa Indian from Arizona making pottery * * * . The tools she used for molding a clay pot consisted of a baked clay implement somewhat larger than and resembling an ordinary door knob, with a stem or handle about four inches long projecting from one of the flat sides, and a small wooden paddle made from a piece of dry goods box. Seating herself on the bare ground * * * she held the clay implement in her left hand on which she placed a flattened ball or "pat" of clay, containing as much of the moderately moistened clay as would make the vessel she was working upon. With the wooden paddle in her right hand, being right handed, she beat the clay down, causing it to spread over the "door knob" implement and to hang down over the edges. From time to time, as the work progressed, she moved the tool in her left hand about on the inside of the vessel as the necessities of the case required. After the vessel had been largely molded with the help of the two simple tools, she discarded them entirely and, turning it over on the bottom, she completed the rim and finished it with her bare hands.

The So-called Garden or Domiciliary Mounds

The small flat mounds beginning in the Iron Mountain neighborhood in Missouri, and extending southward into Texas and Louisiana, are inexplicable in our present state of knowledge. Speaking now

[a] In *The Proceedings and Collections of the Wyoming Historical and Geological Society*, IX, 156.

only of Missouri, it may be said they exist by thousands, amid surroundings of every sort. Some extend in close succession for miles at the rate of two to seven or eight on every acre, broken, perhaps, now and then, by a slough or a cypress brake, beyond this continuing as before. Nearly all the smaller ones are made either of reddish, sandy clay, such as forms the upland subsoil, or of gumbo from the low grounds, consequently they are almost invariably infertile, so much so that in a field covered with vegetation their location may be determined by the sparser growth on them. This feature, which was repeatedly stated as a fact by farmers, entirely destroys the hypothesis that the mounds were erected for agricultural purposes, though this is probably true of some mounds here and there on which good crops are raised.

Nor is the theory more plausible that these mounds were erected for camping places by hunters, for there are more of them than there would be animals to hunt at one time.

They were not residence mounds, for there are lacking around them the usual indications of an Indian domicile—broken pottery, bones, fragments of implements, etc.

Nor are they burial mounds, for with rare exceptions they are barren of contents.

The mounds are found in various situations from well-drained high levels to swamps where, after a period of prolonged dry weather when the roads become hard and even dusty, they can be reached only by carefully stepping on roots and stumps to keep out of the mud and water surrounding them. Moreover, scores, even hundreds of them, in the compass of a few square miles, are built on sticky clay lowlands within a few yards or rods of sandy ridges, never muddy, where the ground is dry on the surface within a very short time after the heaviest rains, and where various crops yield abundantly.

It is evident that all the land where the mounds now stand, and perhaps the entire country except the present swamps, was prairie land, destitute of timber at the time they were built. The sloughs and bayous mark the courses of former streams, and it may be that when the mounds were made these were open channels clear of timber, affording free passage in canoes. This would explain the location of village sites along their margins. With the actual levels of upland and water courses remaining as at present, if there were no forest growth at all there would be no great overflows except backwater from the Mississippi, because local rainfall would rapidly drain away. Many floods now are caused by the choking up of streams with driftwood; if this were all cleared out, to give an unobstructed flow, water would pass away in half the time or less.

It is agreed among geologists that a large area in Missouri and Arkansas, including a considerable part of the mound territory, sank several feet at the time of the great earthquake of 1811. Consequently, lowlands now subject to periodical overflow were perhaps sufficiently elevated prior to that catastrophe to escape any but phenomenal floods, and were quite habitable. If this be the case, more extensive excavations about these mounds may reveal the motive or purpose of their construction.

The Copper Plates from Malden, Dunklin County

These objects (pls. 15–19) were plowed up by Mr. Ray Groomes on the farm of Mrs. Baldwin, 2½ miles south of Malden, Dunklin county.

Mr. Groomes makes in substance the following statement:

He was plowing much deeper than usual, probably 16 or 18 inches. His attention was attracted by something shining or glittering on the land turned over by his plow at this point, and he stopped to examine it. He found a few small scraps of copper. On looking at the bottom of the furrow, whence they had come, he found that his plow had struck the upper end of these copper pieces, which lay in close contact, "with the heads down," and inclined at an angle of 45°. He saw no evidence that they had ever been wrapped in cloth or any other substance, separately or together. He dug around them with his pocketknife, the loose sand and soil being easily removed, and drew them out of the earth one by one. There was something with them which looked to him like a small piece of "slate" [shale], such as he had frequently noticed in this ground in plowing. Possibly this was all that remained of a sun-dried or soft-burned clay vessel which went to pieces in the earth. There was also a small amount of some "white substance," not identified, none of which was preserved.

Mr. Groomes is positive in his statement that the specimens were in immediate contact, as he lifted them out one after another, and that very little earth had worked in between them.

Mr. Groomes afterward did a little digging at the spot, but found nothing more, except a few fragments which his plow had broken from the objects.

Neither he nor anyone else consulted had ever seen or heard of any evidence of a village site in the vicinity; no flints, shells, bones, or pottery had ever been observed. Neither are there any mounds in the immediate neighborhood, the nearest being at Bernie, 9 miles northward. From there for many miles to the south the land stretches in a dead level to the East and West swamps, which bound it on either side.

It is altogether probable that the articles[a] were buried here by some aboriginal trader, who may have procured them from Mexico, either in person or by traffic, and who was prevented from returning to the spot or was perhaps unable to locate it again.

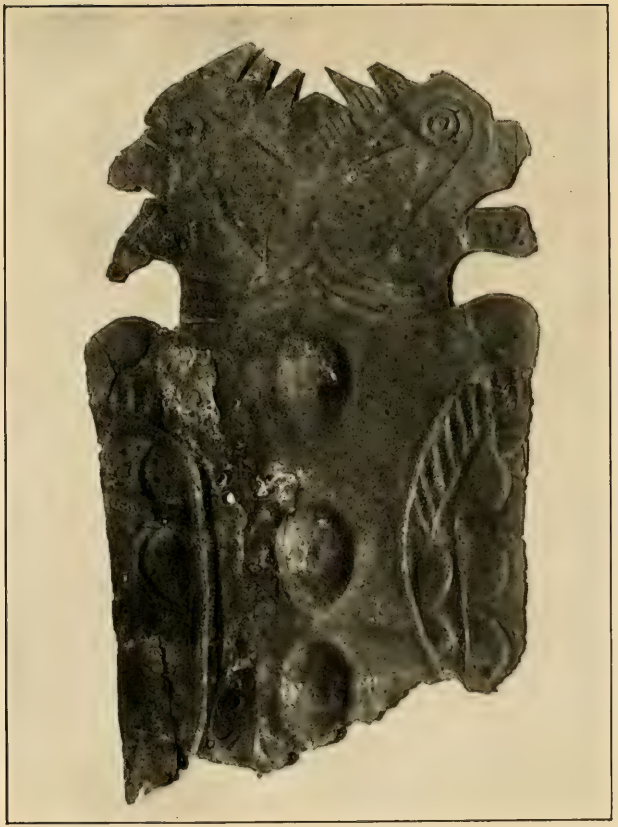
[a] The plates finally came into the possession of Mr. J. M. Wulfing, of St. Louis, who was kind enough to furnish the photographs from which the accompanying illustrations were made.

COPPER PLATE FROM MALDEN, DUNKLIN COUNTY

COPPER PLATES FROM MALDEN, DUNKLIN COUNTY

COPPER PLATE FROM MALDEN, DUNKLIN COUNTY

COPPER PLATES FROM MALDEN, DUNKLIN COUNTY



COPPER PLATES FROM MALDEN, DUNKLIN COUNTY

VILLAGE SITES WORTH EXCAVATING

At "The Pinnacles," near Miami, Saline county, on the farms of Messrs. W. H. Utz and E. S. Casebolt.

On the land of Messrs. August Langenberg and Timothy Leech, at the mouth of Third creek, near Cooper Hill, Osage county.

On the farm of Mr. J. Ed Belch, at the mouth of Osage river.

On the Heyde farm, north of Advance, Stoddard county.

A mile west of Vanduser, Scott county, on the old Batt farm, now owned by Mr. James Farris, of Benton, Scott county.

On next farm south of above, owned by Mr. John E. Marshall, of Sikeston.

On the farm of Mr. J. H. Drew, 8 miles south of East Prairie, on north side of Upton Slough.

On Mr. Lorin Hawke's land, the "old Peter Bess settlement," on west bank of Castor river, above Frisco bridge, a mile west of Brownwood, Stoddard county.

LOCALITIES WORTH INVESTIGATING

Old Bollinger farm, now the Evans farm, a mile south of Advance, Stoddard county.

Farm of Mr. Colbert, 2 miles south of Advance.

August Schonoff farm, 1½ miles west of Advance.

McKinney farm, south of Sikeston, Scott county.

William Andrews farm, adjoining the McKinney farm on the south.

Sikes farm, adjoining the Andrews farm on the south.

South of Green Cox station, on west bank of Little Field swamp, Cape Girardeau county.

REPORTED LOCALITIES POSSIBLY WORTH EXAMINING

Much pottery has been found at the McFadden farm, 2 miles up the river from Belmont, Mississippi county, and on the Hudson farm next above McFadden's.

Many relics have been found around the base of a large mound at Traverse, a mile south of Crosno, Mississippi county.

Distant 5 to 6 miles west of Belmont is Sassafras ridge, where many specimens have been discovered.

On Hoecake ridge, a mile west from Sassafras ridge, are mounds on Mr. Tom Quick's land.

There are mounds, and numerous specimens have been found, on Pinhook ridge, 2½ miles south of Sassafras ridge, and on the Farrin farm, at the old "Tarr store," a mile north of Wolf Island post-office, Mississippi county.

Southwest of New Madrid, on the farms of Mr. W. E. Davis, on Nolin Cypress still farther southwest, and thence on to Little river, are numerous mounds. Some have been opened, which were found to be barren of contents.

ADDITIONAL ARCHEOLOGICAL REMAINS VISITED OR REPORTED

On the Gasconade river

Cairns and village sites about Gascondy.

Village site on river bank a fourth of a mile below Boiling Spring, near Gaines's ford above Vienna.

Cairn on Martin's bluff, 8 miles above Cooper Hill.

Cairn at Fishing Rock, 5 miles above Cooper Hill.

Cairn on Hollenbeck bluff, 4 miles above Cooper Hill.

Cairn on Howerton's bluff, 2 miles below Fishing Rock.

Village site on Schockley's farm, near mouth of Pointer's creek, just above Howerton's bluff.

Village site on Mr. Gum Miller's land, 1½ miles above Cooper Hill, opposite Massie's bluff.

Cairn on Iron hill on Third creek, a mile from Cooper Hill.

Cairns on Nixon's farm on Third creek, 3 miles from Cooper Hill.

Several cairns about Freedom and Hope, on lands of Dr. Jett and Messrs. Fleck, Schollmeyer, and Koch; all have been opened.

The earth is strewn with flint chips in the field next below Heckmann's mill.

Two cairns, destroyed, on Campmeeting bluff, 1½ miles below Pinoak creek.

A series of six connected cairns covering a solid space 20 by 70 feet on the first bluff below Mud, or Muddy, creek; also a single cairn at the lower end of the bluff. All are destroyed.

On Mueller's and Witte's farms, at the mouth of Second creek, are six cairns extending along the top of Lost hill.

Mound of stone and earth on the south end of Turnpike bluff.

At Stolpe, earth mound on Ongken farm; two earth and stone mounds on Bohl's farm.

Boone county

MOUNDS

On Cedar creek, 2 miles east of Claysville.

On Mr. Luther Hart's farm, on first bluff east of Hartsburg.

Two on Mr. John Osterloh's farm, adjoining Shaw's on the east.

Six on Mr. Henry Lohrey's farm, east of Osterloh's.

One on Walker's farm, adjoining Lohrey's.
Two in edge of Hartsburg, on Mr. Rudolph Bischer's farm.
Five on next farm north of Bischer's.
Six on Matthew's land, a mile west of Hartsburg.
Several near Wilton station.
Three on Mr. Henry Baumhoefer's farm, 3 miles south of Easley.
One on Wright's farm, a mile south of Easley.
Three on Mr. Will Rippetoe's land, ½ mile southeast of Easley.
One on Ridgeway's farm, ½ mile east of Easley.
Nine on Leineke's farm, 2 miles north of Easley.
Fourteen on Messrs. Burnett's and O'Rear's farms, a mile south of Providence.
Five on the Hunt estate, at Huntsdale station.
Several on Torbitt's land, 4 miles east of Rocheport.
Five on Burk's farm, east of Torbitt's.
Several on Robey's farm, 1 mile east of Rocheport.
Several on Mr. James Warren's land, north of Providence.
Three on Doctor Chinn's land, west of Rocheport.
One on Mr. Henry Walther's land, 2 miles west of Rocheport.
One, large, on Mr. Frank Smith's land, 5 miles northwest of Columbia, near Perche bridge.
Three near Indian Mound schoolhouse, 3 miles northeast of Harrisburg.
One near Silver Fork of Perche creek "contained two bodies and a sword much rusted."

Callaway county

Mounds all along the top of Cote San Dessein.

Cole county

Six on Mr. Frank Shannon's land, at Osage City.
One on Huffman's farm, adjoining Shannon's on the west.
Four on Walther's farm, near mouth of Moreau creek.
Several west of mouth of Moreau creek.

Franklin county

"Shawnee Town" (in 1817) on sec. 4, T. 42, R. 1 E, of the fifth principal meridian, near Shawneetown ford on Bourbeuse river.
Burial place near Labaddie, T. 44, R. 1 E.
Mounds on nearly every bluff from Labaddie to Washington.
Mounds on Mr. E. Holtgrieve's farm, 2½ miles southwest of Washington.

Gasconade county

Mounds on Mr. C. Danuser's land, SW. ¼, SE. ¼, sec. 8, T. 45, R. 4, 4 miles southeast of Hermann.

Mounds on Mr. Henry Timmemeier's land, adjoining Danuser's on the south.

Mound on Mr. Fritz Witte's farm, near Brown's shanty, near mouth of Second creek, on NE. ¼ NE. of ¼, sec. 27, T. 44, R. 6.

Cairns on Mr. August Roseen's land, near Gasconade river, 3 miles south of Morrison.

Mound on Louck's land in edge of Morrison.

Mounds on Duffner's and Fricke's farms, at mouth of Cole creek, 4 miles east of Gasconade; locally termed "the fort."

Eight (formerly thirteen) mounds on Straub's farm, on edge of Gasconade.

Howard county

Mounds on the Sinclair lands, 6 miles northwest of Harrisburg, on Moniteau creek; on Parmentree's, west of Bailey's ford; on Doherty's, 2 miles northwest of Sinclair schoolhouse.

Three mounds on east side of Missouri, between Boonville and Arrow Rock.

Moniteau county

Mound on bluff 22 miles east of Boonville.

Several mounds between Lupus and Sandy Hook.

Osage county

Village site near mouth of Loose creek, 2 miles above Osage City.

Mounds on Mr. Amil Vincent's land, 1½ miles west of Bonnet's mill.

Village site on right bank of Osage river, 6 miles above Osage City.

Phelps county

Mounds on Mr. J. L. Kellogg's "Spring Valley Farm," 3 miles west of Rolla; and on the next farm south of it.

"Goat Bluff cave," 4 miles up the river from Arlington, much used as a shelter by Indians.

"Gourd Creek cave," 10 miles south of Rolla, contains much refuse and many human remains.

Cairns on Lost hill, ¼ mile south of Gourd creek cave.

Randolph county

Mounds on sec. 2, T. 52, R. 16; also, stone graves.

Warren county

Mounds on bluff near Case station, on Link's land.

REPORT ON SKELETAL MATERIAL FROM MISSOURI MOUNDS, COLLECTED IN 1906–7 BY MR. GERARD FOWKE

By Aleš Hrdlička

I. Condition of the Material

The osteological specimens gathered by Mr. Fowke during the excavations described in the preceding pages were divided into two portions, one of which was sent to the Bureau of American Ethnology and thence transferred to the National Museum, while the other was received subsequently for examination.

On the whole the material is very defective; there is not an entire skull, and there are only a few entire long bones. The specimens were damaged for the most part during excavation, as shown by fresh breaks, and in most cases important parts thus broken off were lost. More than nine-tenths of the bones of the skeletons are missing altogether. Moreover, the surfaces of some of the skulls were treated with a glue-like substance which has since begun to crack and scale off, doing further damage.

It is very difficult to make a satisfactory study of, and to draw conclusions of value from, material in this condition. All that can be safely stated is embodied in the following pages.

II. Crania

Most of the crania are of the dolichocephalic, Indian type. Two or three of them are extreme forms in this respect, suggesting similar specimens recovered in New Jersey from the burials of the Delawares. A close general resemblance exists between the dolichocephalic Missouri skulls and those from the mounds along the Illinois river; both are representatives of the general type, examples of which were found on repeated occasions farther north along the Missouri, particularly in the Gilder mound and vicinity, near Florence, Nebr., and also farther south. Several of these skulls (especially nos. 249,679 and 249,681) are characterized by low foreheads[a] and none are above moderate in capacity. On the average they are rather

[a] See a special report on one of these skulls, in "New examples of American Indian skulls with low forehead," *Proc. U. S. Nat. Mus.*, xxxv, 171–175, 1908.

thinner and show less pronounced masculine features than Indian crania of related forms from other localities.

One of the skulls (original no. 127, from Kurtz mound, p. 63), female, is brachycephalic and belonged doubtless to an individual from another tribe. Besides this there is a male lower jaw (original no. 110, from Easley mound no. 2), which is unusually broad and short and belonged probably to a short skull; while the male skull, original no. 128 (exact locality not stated), gives breadth-length index slightly in excess of the upper limit of mesocephaly.

The jaws and remnants of the alveolar processes show an unusual prevalence about the roots of the teeth of pathological conditions of inflammatory and suppurative nature.

Finally, the teeth of the individuals beyond middle adult age are, almost as a rule, badly and irregularly worn down.

III. Long Bones

The long bones, particularly those of the lower limbs, indicate good musculature; but, as only very few of these bones are entire, not much can be learned as to the height of the people. In several instances where estimates are possible the statures indicated are of fair size, but not exceptional.

In their anthropological features the bones show all the characteristics of the Indian, namely, a rather marked flatness of the humeri and tibiae, and a moderate platymery, or subtrochanteric flattening of the femora. The heads of the tibiae, in the few cases where they are left, show an inclination backward slightly greater than the average in whites.

A number of the femora and tibiae present pathological conditions of protracted inflammatory nature, possibly syphilis.

Numerous long bones and two skulls bear the marks of rodents' teeth, and also more pronounced incisions, seemingly due to cutting. As in many other instances, it is here impossible clearly to distinguish the marks due to rodents from those due to the use of the knife.

IV. Detailed Measurements and Observations

Original no. 3 (from the Dallmeyer mound): Pieces of lower and upper jaws of a young male. No special features except that the third molar on the right side of the lower jaw is impacted; it lies nearly horizontal, facing forward and slightly upward.

Original no. 19 (from Dawson mound no. 14): A defective, female, adult, very dolichocephalic cranium of moderate capacity; slight post-mortem deformation. The lower jaw, which is much damaged, was quite high. Teeth, slightly worn, show no abnormal features.

Measurements of the skull

Diameter antero-posterior, maximum	19.0 cm.	Diameter frontal minimum	9.1 cm.
Diameter lateral maximum, approximate	13.2 cm.	Orbits, height, right	3.5 cm.
Basion-bregma height, approximate	(14.6) cm.	Orbits, breadth, right	4.1 cm.
Alveolar point-nasion height, approximate	7.8 cm.	Orbital index, right	*85.4*
		Nose, height, approximate	5.2 cm.
		Nose, breadth	2.5 cm.

Original no. 23 (from Dawson mound no. 6): Pieces of upper and lower jaws of a male skull. The only feature of interest consists in the greater size in both length and breadth of the third right lower molar than of either the first or the second.

Original no. 27 (from Dawson mound no. 6): The front of a male adult skull. The bones are somewhat less in thickness than the average in the Indian.

The upper jaw has a well-formed arch, moderate alveolar prognathism, and sixteen normal teeth.

The lower jaw also has a regular arch and shows some prognathism. The third molar on the left side was lost very early, or more probably never appeared, though there is sufficient space for it. Anteriorly, this jaw shows a rare and interesting dental anomaly (fig. 20). Ventrally and midway between the bicuspids, both of which are positively second dentition teeth, there is on each side another dental element. On the right side this is quite fully erupted, nearly as high as the bicuspids and resembling these in the shape of the crown, though somewhat smaller; on the left side a similar tooth is just appearing. There are no diastemae between the lower teeth and there is no visible cause for the extra bicuspids.

Measurements of the skull

Menton-nasion height	1.27 cm.	Nose, breadth, maximum	2.45 cm.
Alveolar point-nasion height	7.65 cm.	Nasal index	*46.7*
Diameter frontal minimum	9.1 cm.	Palate, external length	5.7 cm.
Orbits, height, right	3.7 cm.	Palate, external breadth, maximum	6.7 cm.
Orbits, breadth, right	4.0 cm.	Palatal index (Turner)	*117.6*
Orbital index, right	*92.5*		
Nose, height	5.25 cm.		

Original no. 39 (from Dawson mound no. 9): Upper jaw and a portion of the lower jaw of an adult male. The upper jaw presents marked alveolar prognathism; teeth normal, moderately worn; palate regular, external breadth, 6.0 cm., external length, 5.5 cm., index *109.1*. Breadth of nose, 2.5 cm. Suborbital fossæ pronounced.

Original no. 41 (from Dawson mound no. 11): Female adult upper jaw, quite prognathic; median incisors shovel-form, as usual in Indians. Left third molar diminutive, right not erupted; teeth moderately

and somewhat irregularly worn, especially the molars. With this specimen were a few fragments of burnt human bones.

Original no. 76 (from Shaw mound no. 7): Lower jaw of an Indian. Rami show cuts as well as signs of rodents' teeth.

Original no. 89 (from Easley mound no. 8): Male adult skull; base missing, some post-mortem deformation, facial parts broken.

Alveolar processes show signs of inflammatory conditions. The teeth of the lower jaw are moderately but irregularly worn; those of

FIG. 20. Lower jaw with two supernumerary bicuspids, from Dawson mound no. 6.

the upper jaw are nearly all lost (post mortem). Chin angular, quite prominent.

Measurements of the skull

Diameter antero-posterior maximum	18. 6 cm.	Diameter frontal minimum	9. 0 cm.
Diameter lateral maximum	13. 8 cm.	Circumference maximum above supra-orbital ridges	50. 7 cm.
Cranial index	*74. 2*	Arc, nasion-opisthion	37. 0 cm.
Thickness of left parietal bone above temporo-parietal suture	5–7 mm.	Height of symphisis of lower jaw, approximate	3. 5 cm.

Original no. 110 (from Easley mound no. 2): Pieces of the upper and lower jaws of an adult male. The lower jaw is unusually broad and short, and belonged in all probability to a brachycephalic cranium. The bones are of medium strength; the teeth are moderately worn anteriorly, and much more so, particularly on the outside, posteriorly. The genial spines are unusually high (7 mm.). In about the locality where the submaxillary gland lay against the bone there is, on the left side, an abscess cavity and on the right side a deepened and rough depression. These lesions point doubtless to disease of the glands which secondarily affected the bone.

The upper jaw shows, on the right side, a short distance below the malar articulation, a small pathological perforation.

Measurements of the lower jaw

Diameter bigonial	11.3 cm.	Angle, left	127°
Angle, right	133°	Height of symphisis	3.45 cm.

Original no. 111 (from Easley mound no. 2): Pieces of apparently deformed (flat-head ?) male skull and jaws. The walls of the cranial cavity are thick; the lower jaw is high (4.3 cm. at the symphisis) and strong. The teeth are slightly worn below, much worn above. The upper jaw was large and prognathic.

Original no. 114, U. S. Nat. Mus. no. 249680 (locality not given): Half of a female adult lower jaw. Height of symphisis, 3.6 cm.; angle on left, 124°; teeth normal, slightly worn. Genial spines pronounced.

Original no. 116 (from Baumhoefer mound no. 1): Remnants of a well-formed, symmetric, dolichocephalic, adult male skull, of fair capacity. The occiput shows a medium-sized epactal. Parts of the right vertical ramus of the lower jaw have been cut or gnawed off. Teeth normal, but showing advanced and irregular wear. The palate presents in its anterior third a quite marked median torus.

Measurements of the skull

Diameter antero-posterior maximum, approximate	18.7 cm.	Diameter frontal minimum	10.1 cm
Diameter lateral maximum, approximate	13.5 cm.	Nose, height	5.3 cm.
Thickness of left parietal bone above temporo-parietal suture	4–5 mm.	Nose, breadth, maximum	2.7 cm.
Menton-nasion height	12.3 cm.	Nasal index	*50.9*
Alveolar point-nasion height, about	7.3 cm.	Orbits, height, right	3.2 cm.
		Orbits, breadth, right	3.9 cm.
		Orbital index, right	*82.1*
		Height of lower jaw at symphisis	3.7 cm.

Original no. 117 (from Baumhoefer mound no. 1): Fragments of upper and lower jaws of an adult male individual, with badly and irregularly worn teeth; chin angular; height at symphisis, 3.4 cm.

Original no. 122 (from Buescher mound no. 1): Pieces of upper and lower jaws of a male skull, apparently that of a young adult. The teeth are all slightly worn; all third molars missing (never erupted); lower jaw was strong and prognathic.

Original no. 124 (from Buescher mound no. 1): Male adult skull, damaged; probably dolichocephalic. The frontal bone shows a marked external dull metopic crest, extending to the sagittal region. There was a pronounced alveolar prognathism. The vertical rami of the lower jaw are narrow (least breadth, 3.4 cm.). The teeth are normal, but considerably and irregularly worn; all the molars of the upper jaw were lost in life, and at the summit of the roots of each second upper molar there is a perforation, due to suppuration, into the cavity of Highmore.

Measurements of the skull

Diameter lateral maximum	14.4 cm.	Diameter frontal minimum	9.5 mm.
Thickness of parietal above temporo-parietal suture	5 mm.	Angle of lower jaw, mean	118°
		Height of symphisis	3.9 cm.

Original no. 126 (from Buescher mound no. 3): Lower jaw of a young female, damaged; alveolar process prognathic; teeth normal, anteriorly slightly crowded. Third lower molars are larger, as to both length and breadth, than either the second or the first, and each has six cusps.

Original no. 127 (from Kurtz mound): A female, probably adult, rounded, somewhat asymmetrical skull. The asymmetry does not appear to be pathological; it may possibly be post-mortem. All the sutures of the vault are patent.

Measurements

Diameter antero-posterior maximum, approximately	16.5 cm.
Diameter lateral maximum	15.0 cm.

Original no. 128 (exact locality not stated): A skull of an adult, probably a male, of regular form and moderate capacity. Sexual features not pronounced. Lower jaw missing.

Measurements

Diameter antero-posterior maximum	17.7 cm.	Basion-nasion diameter	10.4 cm.
Diameter lateral maximum	14.3 cm.	Diameter frontal minimum	8.8 cm.
Basion-bregma height	13.4 cm.	Foramen magnum, mean diameter	3.25 cm.
Cranial index	*80.8*	Circumference maximum (above supraorbital ridges)	50.0 cm.
Height-length index	*75.7*	Arc, nasion-opisthion	36.4 cm.
Height-breadth index	*93.7*		
Cranial module	15.13 cm.		
Thickness of left parietal bone above temporo-parietal suture	4–5 mm.		

Original no. 129 (exact locality not given): Lower female adult jaw; alveolar process prognathic; teeth normal, much worn.

Measurements

Diameter bigonial	9.9 cm.	Angle, right	146°
Height at symphisis	3.8 cm.	Angle, left	141°

Original no. 131 (from Brenner mound no. 2): An adult male skull, very dolichocephalic, partially deformed. There is a slight flattening on the frontal bone above the middle, on each side of the median line, seemingly produced by the pressure of two small pads, and there is also a quite marked occipital compression. The forehead is low, though showing distinct convexity. The supra-orbital ridges are prominent and the supraorbital border distad from them is protruding.

Along the border, just mentioned, of the orbits are marks made by rodents' teeth and also marks resembling knife cuts; and in the lower part of the right parietal, about the middle, there is a semicircular area bearing lines resembling cuts and also traces of rodents' teeth; this is 3 cm. in diameter.

Original no. 131a (locality probably the same as that of the previous specimen): A portion of a calvarium of an adult skull, sex not ascertainable. The right parietal shows several defective areas of different sizes, all approximating more or less to the circular in form, caused apparently by rodents; yet some of these areas may be due to human agency.

Original no. 134 (from the Saline County village site): Frontal portion of the calvarium of an adult female. The skull was apparently dolichocephalic. Diameter lateral maximum—the only measurement of importance determinable—13.4 cm. The walls are rather thin.

U. S. Nat. Mus. no. 249679[a] (exact locality not given): Part of the vault of a skull, including most of the frontal and a small portion of the top of each parietal. The skull was probably that of a male beyond middle adult life. It was narrow and long in form, and not deformed. The bones are rather delicate for a male, the thickness of the front ranging from 3 to 5 mm.

The specimen is interesting principally because of a low forehead, marked ventrally as well as dorsally. The supraorbital ridges are not excessive, but the border distad from them protrudes from the forehead proper, forming with the ridges a prominent supraorbital arc.

U. S. Nat. Mus. no. 249681 (from the Klamm mound, opposite Kansas City; see p. 72): Parts of an adult, male, dolichocephalic skull, of moderate size and average thickness of bones, with low

[a] Discussed more in detail in the "New examples of modern Indian skulls with low forehead," in *Proc. U. S. Nat. Mus.*, xxxv, 173, 1908.

forehead; also a few bones of the body. The outer surface of the skull, and to a less extent that of the bones, show remains of red pigment, apparently ocher; but it does not seem, notwithstanding the absence from the specimens of red stains ventrally, that the pigment was applied as a paint. The cranium is so damaged that no measurements of importance are obtainable.

The various ridges and processes on the bones indicate a powerful musculature. The upper portion of the right femur shows marked platymery (3.9 x 2.75 cm. at the broadest part of the flattening).

The left femur has strongly developed linea aspera.

A portion of the right tibia is diseased; this is considerably thickened and the surface bears evidence of some slow inflammatory process—possibly syphilis.

The portion remaining of the left tibia is normal. The shaft is of shape 3;[a] it measures, at about the middle, 3.45 cm. in the antero-posterior and 2.55 cm. in the lateral diameter.

The humeri give the following dimensions at the middle: Diameter antero-posterior, right, 2.7 cm.; left, 2.55 cm. Diameter lateral, right, 1.8 cm.; left, 1.9 cm.

U. S. Nat. Mus. no. 249683 (exact locality not given): Parts of five femora.

All of the specimens in this lot show defects due probably to cutting as well as to the gnawing of rodents. These are found on both ends of each bone, and when the bones are placed side by side the defects appear to be similar, reaching in a more or less rounded way into the wall of each bone posteriorly, below the trochanters. The similarity of the effects produced argues against them being the work of rodents alone, although signs of rodents' teeth are plain everywhere in the cuts.

Physically all the femora show strongly developed linea aspera; they show also more or less marked platymery (specimen A, 3.5 x 2.5 cm.; specimen B, 3.4 x 2.6 cm.; specimen C, 3.2 x 2.55 cm., at the greatest breadth of the flattening).

Nat. Mus. no. 249684; original no. 40 (exact locality not given): Bones from the right lower limb of a female adult skeleton.

Femur broken, shaft shape 1, strong linea aspera, marked third trochanter and pronounced tubercle at the top of the anterior intertrochanteric line. Diameters at the broadest part of the subtrochanteric flattening, 3.25 x 2.3 cm.

Right tibia, shaft shape 1; length, 34.7 cm. The bone is not platycnemic and besides its natural stoutness the shaft is slightly thickened by disease.

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[a] See "Typical forms of shaft of long bones," in *Proc. Assoc. Amer. Anatomists*, 14th ann. sess., 1900, 55 et seq.

U. S. Nat. Mus. no. 249685; original no. 114 (exact locality not given): Bones of a male skeleton.

Femora: Length (bicondylar), right, 45.0 cm., left, 45.4 cm. Diameters at greatest expanse of subtrochanteric flattening, right, 3.45 x 2.4 cm.; left, 3.35 x 2.4 cm. The right bone shows a moderate and the left a pronounced third trochanter; while anteriorly both present a well defined tubercle at the upper limit of the intertrochanteric line. In shape the shaft of each represents type 1.

Special: In its lower two-fifths the right bone is diseased, showing an irregular diffused swelling, with a marked increase in weight, and there is a small spot, honeycombed through suppuration, both anteriorly and posteriorly above the lower articular surface; all of which probably indicates syphilis. The left femur and the tibiæ are normal.

Tibiæ: Length, right, 38.0 cm.; left, 38.2 cm. Diameter antero-posterior at middle, right, 3.4 cm.; left, 3.35 cm. Diameter lateral at middle, right, 2.5 cm.; left, 2.1 cm. Shape of shafts, both approximating type 2. The head in both shows quite marked inclination backward. Right fibula, normal; length, 37.0 cm.

U. S. Nat. Mus. no. 249686 (exact locality not given): Left humerus of an adolescent, damaged. No special features physically. This specimen shows numerous positive marks of cutting, especially at the middle and the upper third, where they penetrate, particularly at the middle, in a V-shaped incision into the cavity of the shaft.

U. S. Nat. Mus. no. 249687 (exact locality not given): Right tibia of an adolescent, probably of the preceding subject; damaged. This shows marks of cutting as well as of rodents' teeth; otherwise there are no special features.

U. S. Nat. Mus. no. 249688; original no. 30 (exact locality not given): Bones of a male skeleton.

Left femur: Length, 48.5 cm.; diameters at greatest breadth of upper flattening, 3.9 x 2.9 cm.; shape of shaft, rounded; pronounced linea aspera.

Tibiæ damaged; shape of shaft in each approximately type 2. Diameter antero-posterior at middle, right, 3.9 cm.; left, 4.0 cm. Diameter lateral at middle, right, 2.3 cm.; left, 2.3 cm.

Head shows slightly more than average inclination backward as compared with the average head of the tibia in whites.

U. S. Nat. Mus. no. 249689; original no. 115 (from Easley mound no. 2): A pair of damaged adult tibiæ. Shape of shaft in both, type 3. Diameter antero-posterior at middle, right, 3.6 cm.; left, 5.0 cm. Diameter lateral at middle, right, 2.65 cm.; left, 2.6 cm. Both bones, but especially the right, show a moderate bend backward above the middle.

U. S. Nat. Mus. no. 249690; original no. 60 (exact locality not given): Pieces of three tibiæ and one fibula.

Specimen A: Right tibia, male, adult, damaged. Shape of shaft, 3; diameter antero-posterior at middle, 3.9 cm.; diameter lateral at middle, 2.3 cm. Quite marked bend backward above middle.

Specimen B: Right tibia, female, adult, damaged. Shape, 3. Diameter antero-posterior at middle, 3.0 cm.; diameter lateral at middle, 2.3 cm. Slight outward bend.

Specimen C: Left tibia, adult, probably female, damaged. Shape, 2, typical. Diameter antero-posterior at middle, 3.3 cm.; diameter lateral at middle, 2.0 cm.

Specimen D: Left female adult fibula, normal; length, 33.9 cm.

U. S. Nat. Mus. no. 249691; original no. 16 (exact locality not given): Bones of a female adult skeleton, mostly damaged.

Femora: Length, right, 42.4 cm.; left (?).

Diameters of upper flattening at its greatest breadth, right, 3.1 x 2.4 cm.; left, 3.2 x 2.4 cm. Shape of shafts both approximating elliptical; linea aspera in both pronounced. Third trochanter small but well-defined on right, moderate-sized on left; in addition each bone presents a pronounced gluteal ridge. A rather large bulge or tubercle is seen on each side at the upper extremity of the anterior inter-trochanteric line.

Tibiæ: Length, right, 35.8 cm.; left (?). Diameter antero-posterior at middle, right, 3.5 cm.; left, 3.4 cm. Diameter lateral at middle, right, 1.85 cm.; left, 1.9 cm. Shape of shaft in each, type 4. Head of right bone shows a pronounced bend backward; that of the left is missing. Upper third of the sacrum shows a defective, posteriorly open, neural arch.

U. S. Nat. Mus. no. 249692 (exact locality not given): Bones of a male skeleton, mostly damaged.

Femora: Diameters at greatest breadth of upper flattening, right, 3.65 x 2.6 cm.; left, 3.5 x 2.6 cm. Shape of shaft in both approximates type 5; the linea aspera is strong in the right, moderately strong in the left bone. A medium-sized well-defined third trochanter is present on each side, and there is in each bone a well-marked tubercle at the upper end of the anterior inter-trochanteric line.

Both bones show appreciably greater curvature backward than usual at the upper third of the shaft.

Tibiæ: Diameter antero-posterior at middle, right, 3.85 cm.; left, 3.75 cm. Diameter lateral at middle, right, 2.25 cm.; left, 2.15 cm. Shape of shaft: both type 4, pronounced. The left bone shows a marked exostosis of the popliteal ridge. Left fibula, length, 36.9 cm.

Besides the above there is in this lot a specimen which shows a bony fusion, in a semiflexed position, of the proximal two phalanges of one of the fingers.

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